AD 404 490

63-3-4

FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE

Qualified requesters may obtain copies of this report direct from ASTIA.

Report No. DEV-3616

Copy No. 6

DOUGLAS AIRCRAFT DIVISION • LONG BEACH, CALIFORNIA

ENCL (4) TO:
C1-25-2069

Best Available Copy

FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE

REPORT NO. DEV-3616
DATE: 12-7-62

CONTRACT NOa(s) 59-6226c

DOUGLAS AIRCRAFT COMPANY, INC.
AIRCRAFT DIVISION
LONG BEACH, CALIFORNIA

DOUGLAS

PREPARED BY:

I. E. Harris
S. F. Tydeman

APPROVED BY:

J. C. Londelius
Manager, Flight Test

S.O. 161168
DWO 6240

TABLE OF CONTENTS

	PAGE NO.
SUMMARY	1.0
INTRODUCTION AND PURPOSE	2.0
EQUIPMENT	3.0
PROCEDURE	4.0
RESULTS AND DISCUSSION	5.0
CONCLUSIONS	6.0
REFERENCES:	7.0
TABULAR DATA AND TIME HISTORIES	8.0
PHOTOGRAPHS	8.1.1
TABLE OF CONDITIONS	8.2.1
INITIAL CONDITIONS FOR SATISFACTORY LANDINGS	8.3.1
TIME HISTORIES OF SATISFACTORY LANDINGS	8.4.1
TIME HISTORIES OF GROUND LOADS	8.5.1
OBSERVED FIELD DATA	8.6.1
DETERMINATION OF WHEEL ANGULAR VELOCITIES	8.7.1
DETERMINATION OF VERTICAL AND HORIZONTAL SPEEDS	8.8.1
SURVEY DATA	8.9.1
WEIGHT DETERMINATION	8.10.1
STRUT AND TIRE PRESSURES	8.11.1

LIST OF PHOTOGRAPHS

	PAGE
Left Front Quarter View - Model A4D-2 Airplane BuNo 142089 with Centerline Instrumentation Store and Two 150 Gallon External Fuel Tanks Installed.	8.1.1
Left Three Quarter Rear View - Model A4D-2 Airplane BuNo 142089 with Centerline Instrumentation Store and Two 150 Gallon External Fuel Tanks Installed.	8.1.2
Aerial View of Operational Site at NATC	8.1.3

FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE

SUMMARY

A Flight Test program was conducted under the direction of the Douglas Aircraft Company at the Naval Air Test Center, Patuxent River, Maryland to obtain landing gear loads and airplane responses associated with field landings under controlled conditions. A total of 209 landings was made by NATC pilots with a Model A4D-2 airplane during the period from 8 September 1960 to 2 November 1960 to obtain 29 landings satisfying the desired touchdown conditions. Landings were made at two values of sink speed at each of two different approach speeds on two types of runway surface, dry concrete and concrete coated with approximately one-eighth inch of non-skid deck compound. Landings were also completed at three sink speeds with external fuel tanks installed on the wing pylons. Additional landings were made to obtain unsymmetrical touchdown conditions and others were made to run over a cross-deck pendant with the tires bottomed.

Data are presented in this report in the form of time-history plots for 26 satisfactory landings, since calibration data were found to be invalid for the early landings. The data from the 26 landings were used by the Douglas Aircraft Company to compare with predicted loads (analysis) and drop test loads obtained with the identical instrumentation.

INTRODUCTION AND PURPOSE

A program was established under Contract NOa(s) 59-6226c to measure airplane loads and responses during field landings under controlled conditions and during drop tests simulating the field landings. The results of the field landings and the drop tests were combined with a dynamic analysis to provide a basis for evaluating the adequacy of simulating loads in airplane and jig drop tests and the extent to which those loads might be determined by dynamic analysis. Consistent instrumentation was maintained wherever possible for the tests. The identical instrumentation was used in the majority of applications for the field landings and the drop tests and one of the instrumented main landing gear was one that had been used previously by NASA in their forward velocity landing jig facility. This report presents the results of the field landings performed to obtain the desired touchdown conditions.

The Model A4D-2 airplane, BuNo 142089, was used for the flight test program. The airplane was made available at NATC for instrumentation July 1, 1960 and the flight tests were conducted during the period from September 8 to November 2, 1960. The airplane remained under the custody of NATC during the instrumentation period and during the flight test program. Douglas Aircraft Company personnel installed the instrumentation and were responsible for the airborne data and the photoscope tracking data and for the technical aspects and direction of the flight test program. Maintenance and flight operations of the airplane and operation of supporting ground instrumentation were all handled by NATC personnel.

The airplane was instrumented to measure the following parameters:

1. Main Landing Gear - Left and Right

   Vertical, Drag and Side Loads
   Strut Position
   Strut Velocity
   Normal, Longitudinal and Lateral Acceleration of Lower Mass
   Normal and Longitudinal Acceleration of Upper Mass
   Strut Metering Chamber Pressure
   Strut Air Chamber Pressure
   Drag Brace Axial Load
   Wheel Angular Position

2. Nose Landing Gear

   Strut Position
   Normal Acceleration of Upper Mass

3. Airplane Center of Gravity

   Normal Acceleration (High and Low Range)
   Longitudinal Acceleration
   Pitch and Roll Attitude
   Rate of Roll

INTRODUCTION AND PURPOSE (continued)

4. Left and Right Wing Tip

Normal Acceleration

5. Nose Equipment Rack

Normal Acceleration at Forward and Aft End of Rack
Normal Acceleration of Aircraft Structure at Forward and Aft End of Rack

6. Left External Fuel Tank - 150 Gallon Tank at Wing Sta. 75.0

Normal and Lateral Acceleration at Tank Sta. 38.0
Longitudinal Acceleration at Center of Gravity, Tank Sta. 76.5
Normal and Lateral Acceleration at Tank Sta. 122.3

7. Right External Fuel Tank - 150 Gallon Tank at Wing Sta. 75.0

Normal and Lateral Acceleration at Tank Sta. 38.0

At the completion of the Flight Test program, the instrumentation was removed from the airplane and used during the drop test program.

The purpose of the Flight Test program was to obtain data from the above instrumentation during landings at specified conditions. The specific conditions are given below:

Two symmetrical landings each condition on dry concrete and repeated on non-skid surface with a gross weight of 13,250 lbs and the following conditions of horizontal and vertical speed:

110 knots at 12 and 16 fps
125 knots at 12 and 16 fps

Two symmetrical landings each condition on dry concrete with a gross weight of 14,250 lbs (150 gallon external tanks-full JP-5-installed at Wing Sta. 75), and the following conditions of horizontal and vertical speed:

110 knots at 12 and 16 fps
125 knots at 12 and 16 fps

During the program, these conditions were altered to a horizontal speed of 135 knots at vertical speeds of 8, 12 and 16 fps.

Three symmetrical cable impact landings at a gross weight of 13,250 lbs and vertical and horizontal speeds between 14-16 fps and 110-125 knots, respectively. Cable impact to be defined as running over a cross deck pendant with the main gear tires fully deflected as a result of the landing impact.

INTRODUCTION AND PURPOSE (continued)

Six asymmetrical landings with 4 to 6 degrees of roll with gross weights between 13,250 to 14,250 lbs, vertical speeds between 12 and 16 fps and horizontal speeds between 110 and 125 knots. The number of landings required was reduced to four during the program.

With the program adjustments noted above, a total of 29 specific landings were required to meet the specified touchdown conditions.

The allowable tolerances for each condition were:

Gross Weight	± 500 lbs.
Vertical Speed	± 1 fps
Horizontal Speed	± 3 knots

The program was terminated November 2, 1960, as reported in Reference 4, when the program support personnel were required for higher priority shipboard projects. All objectives of the flight test program had been achieved at that time except for the possibility that the tires had not been completely bottomed at the time of rolling over the arresting cable.

This report presents the data obtained during the Flight Test Program. Data obtained during the drop test program are presented in Reference 1. The comparison of these flight test loads and the drop test loads with the theoretical analysis is presented in Reference 2. The NASA test results are presented in Reference 5. A description of the instrumentation used for the flight test and drop test programs is presented in Reference 3.

EQUIPMENT

A Model A4D-2 airplane, BuNo 142089, was used to obtain the subject data. Recording instrumentation was carried in a modified 300 gallon tank on the centerline of the airplane. Photographs of the external configuration of the airplane are shown on Pages 8.1.1 and 8.1.2.

Details of the instrumentation are given in the instrumentation report, Reference 3.

Goodyear main gear tires were used for all landings to provide consistent data. These tires were the same type as those used by NASA with main landing gear No. 10 on their forward velocity jig drop tests.

PROCEDURE

The data presented herein were obtained by performing "touch and go landings"; i.e., the airplane touched down and 3 to 5 seconds after touchdown, power was applied and the airplane became airborne. The airplane was flown around the landing pattern and another touchdown was made. These touch and go landings were performed in series of 5 or 6 landings. The airplane was then refueled and another series of landings was performed.

The landings were performed on Runway 9-27 at the Naval Air Test Center, Patuxent River, Maryland. An aerial view of the landing area showing the supporting ground instrumentation is included on Page 8.1.3. The airplane was maintained and flown by Navy personnel throughout the Flight Test program. Seven different Navy pilots participated in the program.

The required gross weight was obtained by controlling the quantity of internal fuel. A variation of ± 500 pounds from the desired weight was an accepted tolerance. Each series of landings was started 500 pounds above the desired weight and continued until the weight was 500 pounds less than the desired weight. Page 8.10.1 shows the actual weighing of airplane with all equipment installed and zero fuel. Pages 8.10.2 through 8.10.6 show the weight empty for each group of landings, the grouping determined by changes to the basic weight of the airplane. The fuel quantity system was calibrated prior to the landing program by adding a measured quantity of fuel and reading the pilot's fuel quantity gage. A plot of actual fuel vs indicated fuel, shown on Page 8.10.7 was used to correct indicated fuel readings to actual fuel in the airplane.

The landing approach was performed utilizing the mirror landing system. The mirror angle was adjusted to give the desired vertical sink speed for a given pre-selected horizontal speed. The approach speed was selected, accounting for the wind direction and velocity, to result in the desired horizontal speed.

The landings were performed on two types of surfaces, concrete and non-skid surface. The surfaces were laterally adjacent to each other on the runway.

The left side of the runway remained in the "as is" condition and the right side was coated by Navy personnel with a standard non-skid compound. A sketch of the landing area is shown on Page 8.9.3. The grids painted on each landing surface were utilized in an attempt to measure yawing and skidding velocity at touchdown.

The asymmetric landings were performed to obtain data in a rolled attitude landing condition. A normal approach was made and approximately 20 feet above the ground, the desired roll angle was established and held until ground contact.

PROCEDURE (continued)

The cable impact landings were landings during which an attempt was made to run over a 1-3/8 inch cross deck pendant with the main gear tires flattened as a result of the landing impact. An estimate of the distance covered to obtain tire bottoming was used to establish the desired touch-down point prior to the cross deck pendant. The cross deck pendant of the MK 5 arresting gear on Runway 27 was used for these landings. A special pendant with a 1-3/8 inch cable was fabricated for the tests. The cable was supported on the normal spring steel pendant supports approximately 4 inches above the runway.

For each landing, initial acceptability was determined from TRODI (Touchdown Rate of Descent Indicator) for vertical sink speed, SODI (Speed Over Deck Indicator) for horizontal speed, and ground observation for symmetry. Photoscope camera coverage was obtained for all landings and was used to determine the actual vertical and horizontal speeds for the satisfactory landings. The oscillograph records were perused as soon as available after the landings for operation of all important parameter transducers. The primary method of determining symmetry was observation of the oscillograph traces measuring drag brace loads of the two main landing gear.

RESULTS AND DISCUSSION

Twenty-nine landings were selected from the total of 209 landings as satisfying the specified conditions. Page 8.2.1 gives these conditions and indicates the landings satisfying each condition. Subsequent to the flight test program calibration data were determined to be invalid to reduce the landing gear vertical and drag loads for Landings 8, 26, 49, 68, and 70. A discussion of this discrepancy appears in the Instrumentation Report, Reference 3. Landings 123 and 128 were substituted for those five landings on dry concrete. Page 8.3.1 presents the initial conditions for each satisfactory landing.

The desired touchdown conditions were achieved satisfactorily for all the various test configurations and conditions with the possible exception of the cable impact landings. These cable impact landings were to be made so that the cross deck pendant was run over with the main gear tires fully deflected as a result of the landing impact. A total of 37 landings was made for the purpose of obtaining the cable impact data but instrumentation malfunctions invalidated all but 12 of the landings. Since it was not possible to determine for sure whether the tires were fully bottomed at the time of cable impact for any of these 12 landings, additional cable impact landings would have been desirable. The flight test program was terminated, as discussed in Reference 4, however, before any additional landings could be obtained.

Pages 8.4.1 through 8.4.84 present the data in engineering units in the form of time-history plots for the 26 landings. These data are presented for those landings that satisfied the required initial conditions. The landing gear vertical and drag loads are plotted as strain gage readings reduced to pounds force perpendicular and parallel to the strut centerline.

Pages 8.5.1 through 8.5.13 are time-histories of the landing gear ground reactions for the symmetrical landings of the dry concrete and the non-skid surface. These ground reactions, perpendicular and parallel to the ground, were obtained from strut loads with application of an inertia correction for the gear lower mass. The coefficient of friction was computed from the ratio of drag to vertical ground loads and is presented on these plots.

The oscillograph readings were reduced to strut loads by application of the following equations:

<u>Left Gear</u>

$$\text{Vertical Load} = (42{,}500 + 90.0\ S)\ \delta/\Delta_V + (100.0 + 95.0\ S)\ \delta/\Delta_D$$

$$\text{Drag Load} = (-670 + 110.0\ S)\ \delta/\Delta_V + (4575.0 - 5.0\ S)\ \delta/\Delta_D$$

RESULTS AND DISCUSSION (continued)

Right Gear

Vertical Load = $(55495 - 425.4\ S)\ \delta/\Delta_V + (450 + 1103.9\ S)\ \delta/\Delta_D$

Drag Load = $(42869.9 + 32.8\ S)\ \delta/\Delta_V + (8455.8 + 30.8\ S)\ \delta/\Delta_D$

Where S = strut position of the respective landing gear, inches compressed

δ = Channel trace deflection minus trace deflection for zero load.

Δ = Calibration pip height obtained from response of channel to a known voltage.

Subscript V = Response of vertical channel

Subscript D = Response of drag channel

The strut loads were reduced to ground loads by application of the following equations:

$F_{VG} = (F_A + F_{AA}) \cos(\theta - 6\text{ Deg}) - (F_N + F_{AN}) \sin(\theta - 6\text{ Deg})$

$F_{NG} = (F_N + F_{AN}) \cos(\theta - 6\text{ Deg}) + (F_A + F_{AA}) \sin(\theta - 6\text{ Deg})$

Where F_{VG} = Vertical ground load, lbs.

F_A = Vertical strut load, lbs.

F_{AA} = Inertia force parallel to strut centerline, positive down, lbs.

F_{HG} = Horizontal ground load, positive aft, lbs.

F_N = Drag load (normal to strut) positive aft, lbs.

F_{AN} = Inertia force normal to strut, positive forward

θ = Pitch attitude, degrees

6 Deg = Angle of strut with airplane vertical axis

Calibration information was not available to obtain side loads as explained in Reference 3. The readings were reduced to δ/Δ and plotted. All remaining variables were reduced to engineering units by application of a calibration constant. This information is presented in Reference 3.

RESULTS AND DISCUSSION (continued)

The oscillograph traces were read on a Telereader which magnifies the record to double size. The data were read in 0.001 second increments with time zero defined as the time of initial ground contact. The reader produced 827 counts per inch and the value in counts was punched on data cards for use in an IBM 7090 computer program. The output of the computer program was an output tape, a print-out, and punched cards. The output tape was made available to the analysis group and the data were used as a comparison with theory. Results of the comparisons are presented in Reference 2. The punched cards were used to plot the time-histories presented in this report. A Moseley X-Y plotter was utilized for plotting. Time intervals of plotting were 0.001 seconds.

The oscillograph trace of wheel position appeared with a blip every 10 degrees of wheel travel. Wheel position was plotted versus time. The slope of this plot gives the angular velocity at a given time. The values for velocity in radians per second are plotted versus time and these plots are included as Pages 8.7.1 through 8.7.18. This method of obtaining wheel spin-up is subject to error although the spin-up trend and final wheel speed are considered reasonably accurate.

Page 8.3.1 presents the initial conditions for each of the satisfactory landings. Runway angle was determined by physically measuring the angle at the point of touchdown. A general survey of the landing area was made previous to the landings; however, the survey did not account for irregularities in the runway surface such as tar expansion joints. The survey data are included on Pages 8.9.1 through 8.9.4 for information. The wing lift values presented on Page 8.3.1 were computed from the oscillograph traces of longitudinal and normal acceleration perpendicular and parallel to the fuselage reference line near the airplane center of gravity. The data were resolved perpendicular to the runway surface and presented as wing lift. Sink speeds and horizontal speeds were obtained from the photoscope camera. The photoscope camera is a 35MM space-positioning camera running at a precise frame rate. A detailed description of the camera is given in the Instrumentation Report, Reference 3. The geometric relationships between the airplane flight path, the horizontal plane, the runway, and the photoscope camera are shown on Pages 8.8.60 and 8.8.61. The airplane vertical and horizontal distances from the reference planes were calculated using the azimuth and elevation angles from the film records of the photoscope camera tracking each landing.

Several individuals read the 35MM photoscope camera film and followed the prescribed procedure to obtain vertical and horizontal distances as a function of time. Each person plotted these data and faired a line through the points with the slope of the line representing the speed. These values are presented on Page 8.8.1. The worksheets from which the values were obtained are included on Pages 8.8.2 through 8.8.59.

RESULTS AND DISCUSSION (continued)

The final value of vertical and horizontal speed is the arithmetic average of the values obtained by the various individuals. The maximum standard deviation of the average horizontal speed was 0.67 fps and the average standard deviation of the horizontal speed was 0.29 fps. The maximum standard deviation of the average vertical speed was 0.48 fps and the average standard deviation of the vertical speed was 0.14 fps.

The horizontal speed of the airplane was easily obtained since the speed was constant resulting in a straight line fit of the data. The vertical speed of the airplane was more difficult to obtain because the vertical speed was not constant during the latter portion of the descent. An attempt was made to obtain the vertical speed of the airplane by fitting a polynomial curve to the data. The results obtained in this manner were questionable as indicated by the large deviations (± 1 ft./sec.) resulting from varying several arbitrary or undefined factors; namely, (1) the number of data points included in determining the equation; (2) the degree of the equation selected to fit the data; and (3), the time of touchdown. Item (1) is an arbitrary decision as to whether to consider the last 5-6 feet of descent or the last 20 feet of descent; Item (2) is also an arbitrary decision chosen by examination; and (3), the time of touchdown could not be precisely defined.

The final procedure used to obtain vertical speed was a straight line fairing through the points representing the last 6-8 feet of descent. This method permitted weighting the individual points and eliminating the questionable points. This method is also not as dependent on an exact time of touchdown as a polynomial curve fit.

The photoscope data resulted in vertical and horizontal speeds perpendicular and parallel to a horizontal plane. The speeds were resolved perpendicular and parallel to the runway, as indicated on Page 8.8.61, and are tabulated with the other initial, or touchdown, conditions on Page 8.3.1.

Pages 8.6.1 through 8.6.13 present observed field data for all landings. The wind direction quoted on these pages is the true compass heading from which the wind originated. Wheel touchdown points were determined by observing tire skid marks after each landing. TRODI readings were corrected for calibration error when available.

Landing gear strut and tire pressure information are included on Pages 8.11.1 and 8.11.2.

RESULTS AND DISCUSSION (continued)

The pressures were read prior to operations each day and the values recorded on Pages 8.11.1 and 8.11.2 are the pressures that existed at this time. In most instances, the pressure level was then established at the required value. The required pressures in pounds per square inch are as follows:

Nose gear tire	250
Nose gear strut	210 @ full extension
Main gear tire	320
Main gear strut	25 @ full extension

All pressures for the satisfactory landings were the required value.

CONCLUSIONS

The flight test phase of the Landing Loads Investigation was completed satisfactorily. From a total of 209 landings performed at NATC with an A4D-2 airplane, 29 landings were obtained which satisfied the initial, or touchdown conditions. Calibration data for the main landing gear were subsequently determined to be invalid for some of the initial landings and data could be presented for only 26 satisfactory landings. All of the objectives of the flight test program were achieved satisfactorily with the possible exception that the cable impact landings may not have resulted in complete tire bottoming at the time of running over the cross deck pendant.

REFERENCES

1. Douglas Aircraft Company Report No. ES-40641, "Landing Loads Investigation Laboratory Drop Tests", dated September, 1962.

2. Douglas Aircraft Company Report No. LB-31038, "An Investigation of the Landing Loads Experienced by the A4D-2 Airplane During Flight Tests and Drop Tests and a Comparison with Theory", dated October, 1962.

3. Douglas Aircraft Company Report No. ES-40636, "Landing Loads Investigation Instrumentation", dated 26 October 1962.

4. Douglas Aircraft Company Letter B-25-4178, "Contract NOa(s) 59-6226c - Landing Loads Investigation", dated 15 December 1960.

5. NASA Report TN D-214, "Experimental Investigation of Spin-up Friction Coefficients on Concrete and Non-Skid Carrier Deck Surfaces", dated April 1960.

TABULAR DATA AND TIME HISTORIES

MODEL A4D-2 AIRPLANE BU.NO.142089 WITH
CENTERLINE INSTRUMENTATION STORE AND
TWO 150 GAL. EXTERNAL FUEL TANKS INSTALLED

61

MODEL A4D-2 AIRPLANE BU NO 142089 WITH
CENTERLINE INSTRUMENTATION STORE AND
TWO 150 GAL. EXTERNAL FUEL TANKS INSTALLED

20

AERIAL VIEW OF OPE ONAL

13

LANDING LOADS INVESTIGATION
A4D-2 Buno 142089

CONDITIONS REQUIRED FOR ACCEPTABILITY OF LANDINGS

Two landings each condition

Gross Weight Lbs. (±500)	Symmetrical	Roll ∡ Deg (±1)	V_h Kts (±3)	V_s FPS (±1)	Landing Surface	Condition Letter	Landings Satisfying Conditions	
13250*	yes	0	110	12	Concrete	A	126	49
13250	yes	0	125	12	Concrete	B	8	26
13250	yes	0	110	16	Concrete	C	121	125
13250	yes	0	125	16	Concrete	D	68	70
13250	yes	0	110	12	Non-skid	E	113	120
13250	yes	0	125	12	Non-skid	F	131	133
13250	yes	0	110	16	Non-skid	G	114	117
13250	yes	0	125	16	Non-skid	H	93	95
14250**	yes	0	‡ ~~110~~ (135)	‡ ~~12~~ 8	Concrete	I	146	151
14250	yes	0	‡ ~~125~~ (135)	12	Concrete	J	150	153
14250	yes	0	‡ ~~110~~ (135)	16	Concrete	K	152	155
~~14250~~	~~yes~~	~~0~~	~~125~~	~~16~~	~~Concrete~~	~~L~~	Deleted	‡

Three (3) Landings - Running over Arresting Cable with Tire Bottomed

13250	yes	0	110-125	14-16	Optional	M	179	188	190

‡ Four ~~Six (6)~~ Unsymmetrical Landings

13250-14250	no	4-6	110-125	12-16	Optional	N	167 168 170 171	‡

* Instrumentation Store, No External Fuel Tanks
** Instrumentation Store, Two (2) 150 Gallon External Tanks-Full JP-5

V_h Horizontal Speed in Knots
V_s Sink Speed in Feet/Second

‡ Altered and deleted at the discretion of the cognizant BuWeps Engineer.

◯ Landings not used due to lack of calibration data.

Landings 123 and 128 substituted for these landings.

LANDING NUMBER	GROSS WEIGHT	CENTER OF GRAVITY		PITCH ATTITUDE	ROLL ATTITUDE	ROLL RATE	RUNWAY ANGLE	FLIGHT PATH	WING LIFT	SIN
	LBS	STA	%MAC	DEG	DEG	DEG/SEC	DEG	DEG	G'S	FPS
	REFERENCE PLANE →			FRL	FRL	FRL	HORIZ	HORIZ	RUNWAY	HORIZ
8	13516	234.5	24.0	10.5	0.36 RWD	0.33 R	0.4 B	2.9	1.10	11.0
26	13186	233.6	23.3	10.8	NO DATA	0.30 L	0.5	3.2	1.09	11.4
49	12776	232.7	22.6	15.5	NO DATA	0.31 L	0.4	3.4	1.07	11.0
68	13226	233.7	23.4	6.0	NO DATA	0.31 L	0.5	4.1	1.10	15.7
70	12876	232.9	22.8	6.8	NO DATA	2.49 R	0.3	4.0	1.09	14.6
121	12876	232.9	22.8	13.2	NO DATA	0.89 R	0.2	4.0	1.10	12.5
123	13735	235.2	24.6	8.5	NO DATA	0.02 R	0.4	3.2	1.10	10.7
125	13446	234.3	23.8	9.8	NO DATA	1.02 R	0.3	4.2	1.07	13.9
126	13276	233.9	23.5	9.8	NO DATA	NO DATA	0.5	4.7	1.06	15.5
128	12775	232.7	22.6	10.5	NO DATA	0.00	0.4	4.2	1.00	13.4
93	13600	235.1	24.5	8.0	0.56 RWD	2.12 L	0.4	4.0	1.14	15.3
95	13270	234.3	23.8	7.0	0.46 RWD	0.24 L	0.5	3.9	1.04	14.7
113	12870	233.3	23.1	9.2	2.72 LWD	1.90 L	0.4	3.6	0.97	11.9
114	13660	235.2	24.6	10.5	1.41 LWD	3.22 R	0.5	3.9	1.04	15.8
117	13080	233.9	23.5	11.0	1.79 LWD	5.90 L	0.5	4.9	1.14	15.8
120	13080	233.9	23.5	11.0	NO DATA	1.77 R	0.5	3.5	1.08	12.0
131	13360	234.6	24.1	9.0	1.39 RWD	1.53 R	0.4	3.2	1.06	12.0
133	12970	233.6	23.3	8.0	0.72 RWD	1.84 R	0.4	3.3	1.06	12.5
146	13955	234.7	24.2	11.0	1.93 RWD	2.19 L	0.4	2.4	1.09	9.4
150	14135	233.6	23.3	8.9	2.15 RWD	0.45 L	0.4	3.4	1.04	12.0
151	13895	235.0	24.4	9.9	1.52 RWD	3.43 L	0.4	2.5	1.07	10.1
152	14985	233.3	23.1	8.3	0.22 RWD	1.83 L	0.3	4.2	1.09	16.9
153	14415	232.2	22.3	9.3	2.00 RWD	2.74 L	0.1	3.5	1.06	13.9
155	14195	233.3	23.1	8.9	0.88 LWD	3.17 L	0.3	3.8	1.10	14.8
179	13775	235.0	24.4	11.4	1.35 RWD	0.09 L	NO DATA	NO DATA	1.05	NO DATA
188	13285	233.9	23.6	10.0	0.42 RWD	0.18 L	NO DATA	NO DATA	1.06	NO DATA
190	12785	232.7	22.6	11.3	0.42 RWD	0.00	NO DATA	NO DATA	1.12	NO DATA
167	13675	234.7	24.2	13.3	5.60 RWD	1.72 R	0.3	3.5	1.14	12.7
168	13535	234.5	24.0	13.5	7.30 RWD	4.10 R	0.3	2.7	1.08	10.0
170	13195	233.6	23.3	12.9	10.10 RWD	4.76 L	0.5	3.2	1.07	12.4
171	12985	233.2	23.0	9.8	8.80 RWD	2.16 R	0.3	3.1	1.01	11.7

* PHOTOSCOPE DATA NOT AVAILABLE- VALUES ESTIMATED FROM TRODI, SODI, AND MITCHELL CAMERA DATA.

INITIAL CONDITIONS FOR SATISFACTORY LANDINGS

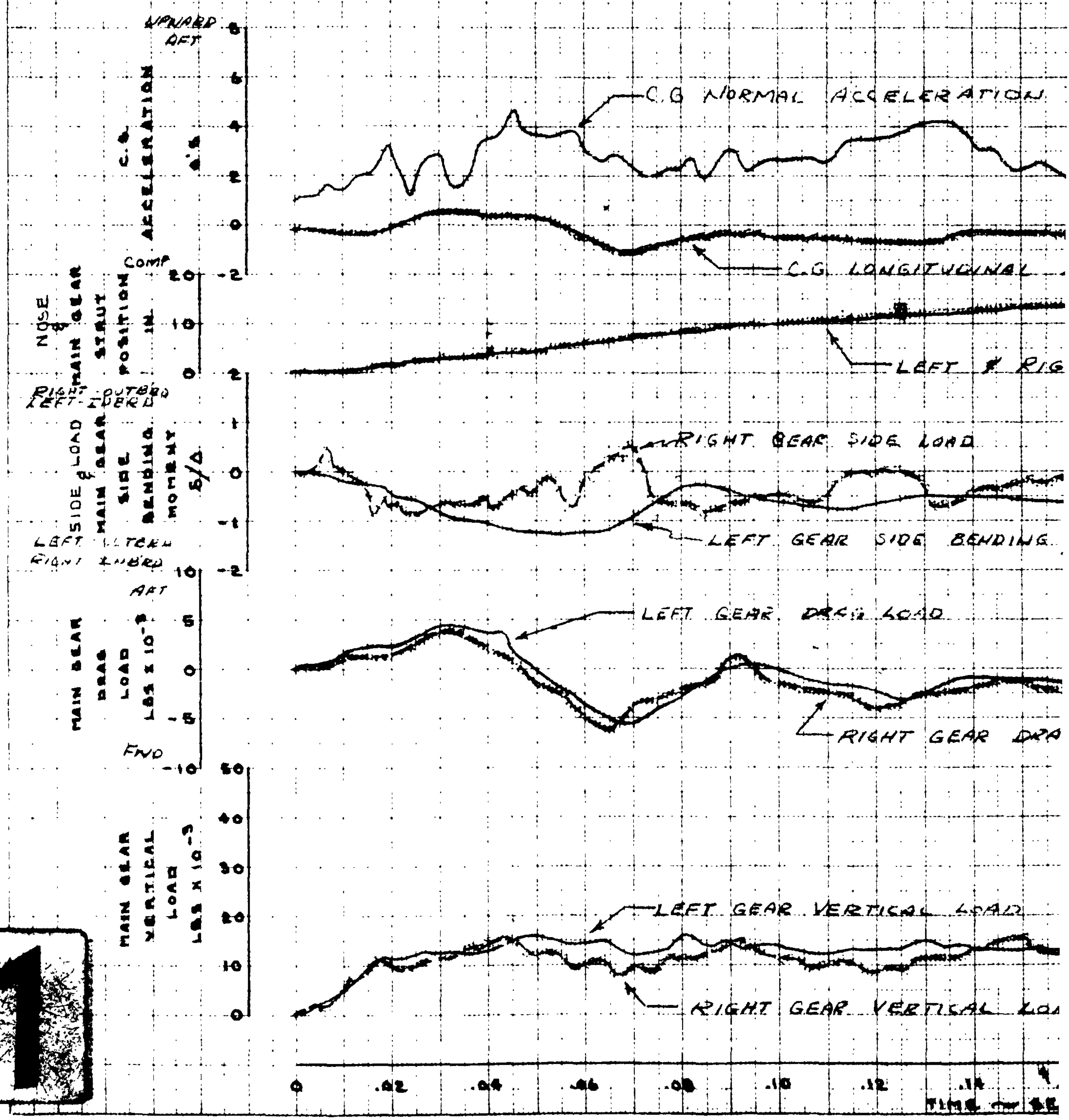
LL TE SEC L	RUNWAY ANGLE DEG HORIZ	FLIGHT PATH DEG HORIZ	WING LIFT G'S RUNWAY	PHOTOSCOPE CAMERA DATA: SINK SPEED FPS HORIZ	SINK SPEED FPS RUNWAY	HORIZONTAL SPEED FPS HORIZ	HORIZONTAL SPEED FPS RUNWAY	HORIZONTAL SPEED KTS RUNWAY	RUNWAY SURFACE CONDITION	TIME HISTORY PAGE NUMBER
3 R	0.4B	2.9	1.10	11.0	11.7	216.0	215.9	127.9	CONCRETE	
0 L	0.5	3.2	1.09	11.4	13.4	206.9	206.6	122.4	"	
1 L	0.4	3.4	1.07	11.0	12.3	185.0	184.3	109.5	"	
1 L	0.5	4.1	1.10	15.7	17.5	217.9	217.6	128.9	"	
9 R	0.3	4.0	1.09	14.6	15.9	211.0	210.6	124.8	"	
9 R	0.2	4.0	1.10	12.5	13.2	179.2	179.1	106.1	"	8.4.1 To 8.4.3
2 R	0.4	3.2	1.10	10.7	12.0	192.4	192.0	113.9	"	8.4.79 To 8.4.81
2 R	0.3	4.2	1.07	13.9	15.0	191.0	190.6	112.9	"	8.4.4 To 8.4.6
DATA	0.5	4.7	1.06	15.5	17.0	187.0	186.7	110.6	"	8.4.7 To 8.4.9
0	0.4	4.2	1.00	13.4	14.7	183.8	183.3	108.8	"	8.4.82 To 8.4.84
2 L	0.4	4.0	1.14	15.3	16.1	221.4	221.3	131.1	NON-SKID	8.4.10 To 8.4.12
4 L	0.5	3.9	1.04	14.7	16.6	217.3	217.2	128.7	"	8.4.13 To 8.4.15
0 L	0.4	3.6	0.97	11.9	13.2	191.1	191.0	113.2	"	8.4.16 To 8.4.18
2 R	0.5	3.9	1.04	15.8	17.4	186.3	186.2	110.3	"	8.4.19 To 8.4.21
0 L	0.5	4.9	1.14	15.8	17.4	186.0	185.9	110.1	"	8.4.22 To 8.4.24
7 R	0.5	3.5	1.08	12.0	13.6	187.0	186.9	110.7	"	8/4/25 To 8.4.27
3 R	0.4	3.2	1.06	12.0	13.5	216.0	215.9	127.9	"	8.4.28 To 8.4.30
4 R	0.4	3.3	1.06	12.5	14.0	217.0	216.9	128.5	"	8.4.31 To 8.4.33
9 L	0.4	2.4	1.09	9.4	11.0	225.3	225.2	133.3	CONCRETE EXT. TANKS	8.4.34 To 8.4.37
5 L	0.4	3.4	1.04	12.0	13.6	226.0	225.9	133.7	"	8.4.38 To 8.4.41
3 L	0.4	2.5	1.07	10.1	11.7	227.0	226.9	134.3	"	8.4.42 To 8.4.45
3 L	0.3	4.2	1.09	16.9	18.1	230.3	230.2	136.3	"	8.4.46 To 8.4.49
4 L	0.1	3.5	1.06	13.9	14.3	227.0	227.0	134.4	"	8.4.50 To 8.4.53
7 L	0.3	3.8	1.10	14.8	16.0	225.5	225.4	133.4	"	8/4.54 To 8.4.57
9 L	NO DATA	NO DATA	1.05	NO DATA	18.0*	NO DATA	NO DATA	128.0*	CABLE IMPACT	8/4.58 To 8.4.60
3 L	NO DATA	NO DATA	1.06	NO DATA	15.0*	NO DATA	NO DATA	126.0*	"	8.4.61 To 8.4.63
0	NO DATA	NO DATA	1.12	NO DATA	16.0*	NO DATA	NO DATA	129.0*	"	8.4.64 To 8.4.66
2 R	0.3	3.5	1.14	12.7	13.8	209.0	208.9	123.7	ASYMMETRIC	8.4.67 To 8.4.69
0 R	0.3	2.7	1.08	10.0	11.1	209.5	209.4	124.0	"	8.4.70 To 8.4.72
5 L	0.5	3.2	1.07	12.4	14.3	220.5	220.4	130.5	"	8.4.73 To 8.4.75
5 R	0.3	3.1	1.01	11.7	12.8	217.5	217.4	128.7	"	8.4.76 To 8.4.78

I, SODI. AND MITCHELL CAMERA DATA.

FORM 26 BP-1
(REV 7 64)

PREPARED BY
CHECKED BY
DATE
TITLE

MODEL A4D-2 AIRPLANE BuN
LANDING LOADS PROGRA
LANDING 121



K·E

42

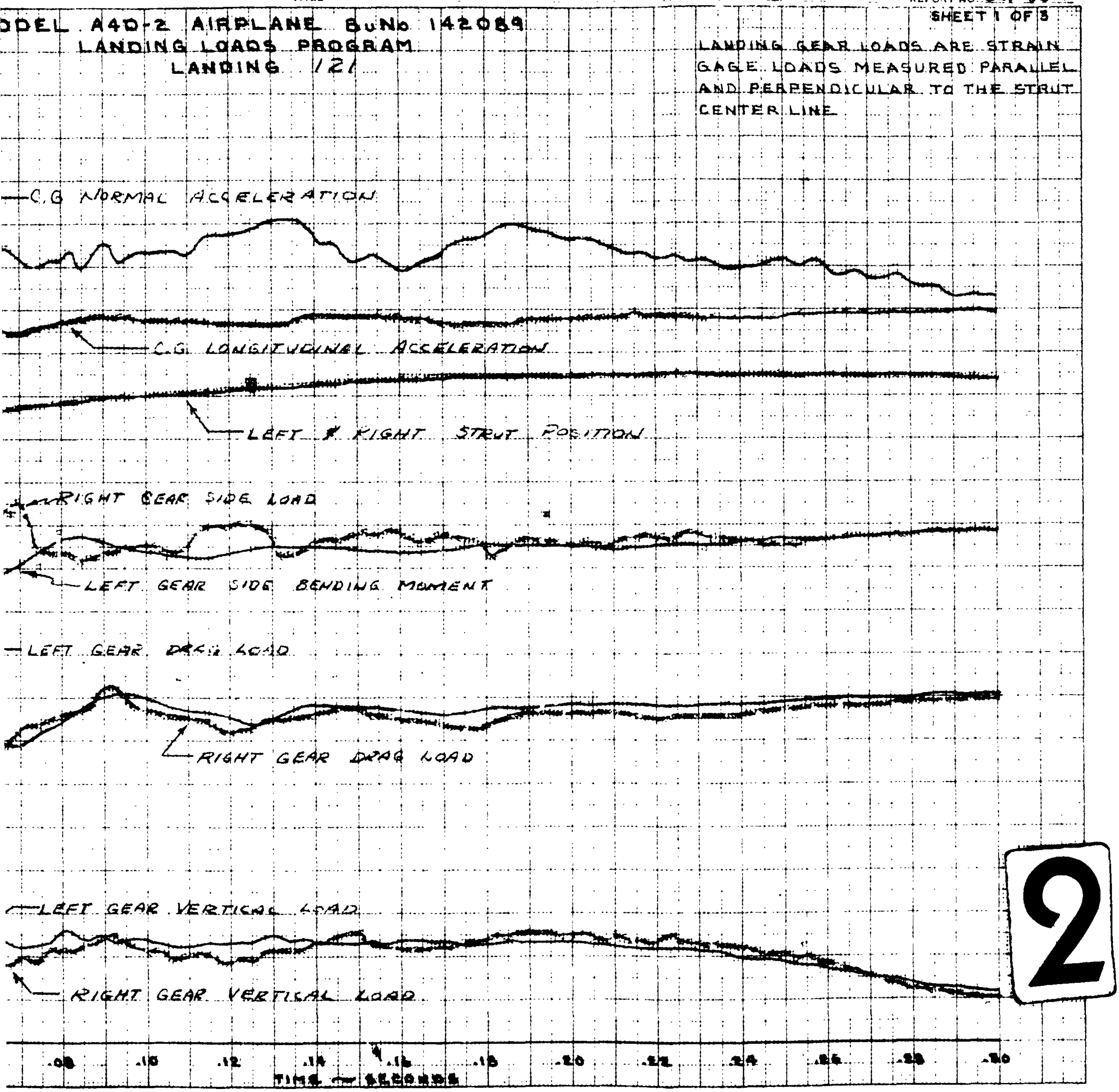
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

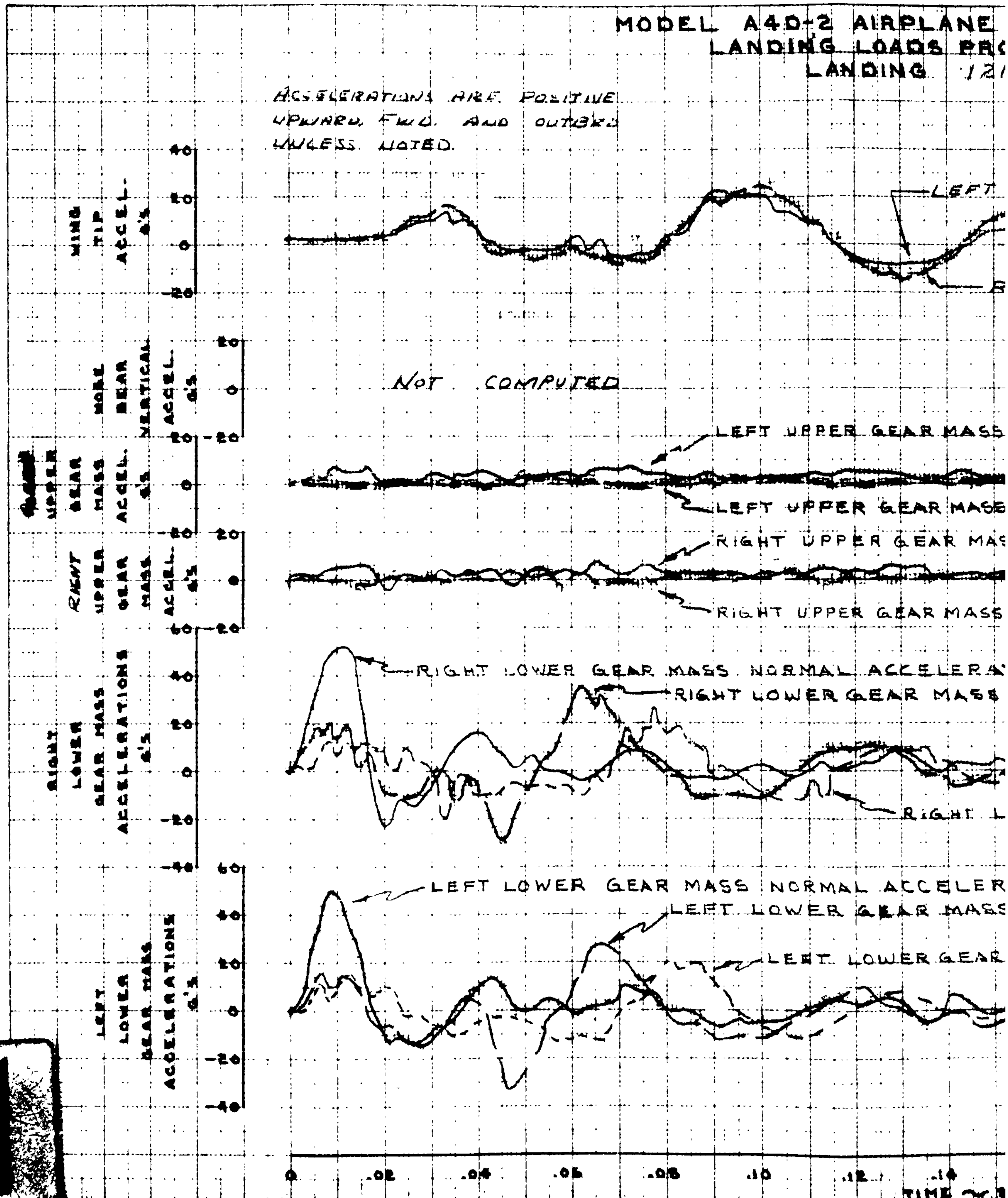
TESTING DIVISION

PAGE: 8.41
MODEL: A4D-2
REPORT NO.: DEV-3616



FORM 28 RP-1
(REV 7-54)

PREPARED B
CHECKED BY
DATE
TITLE



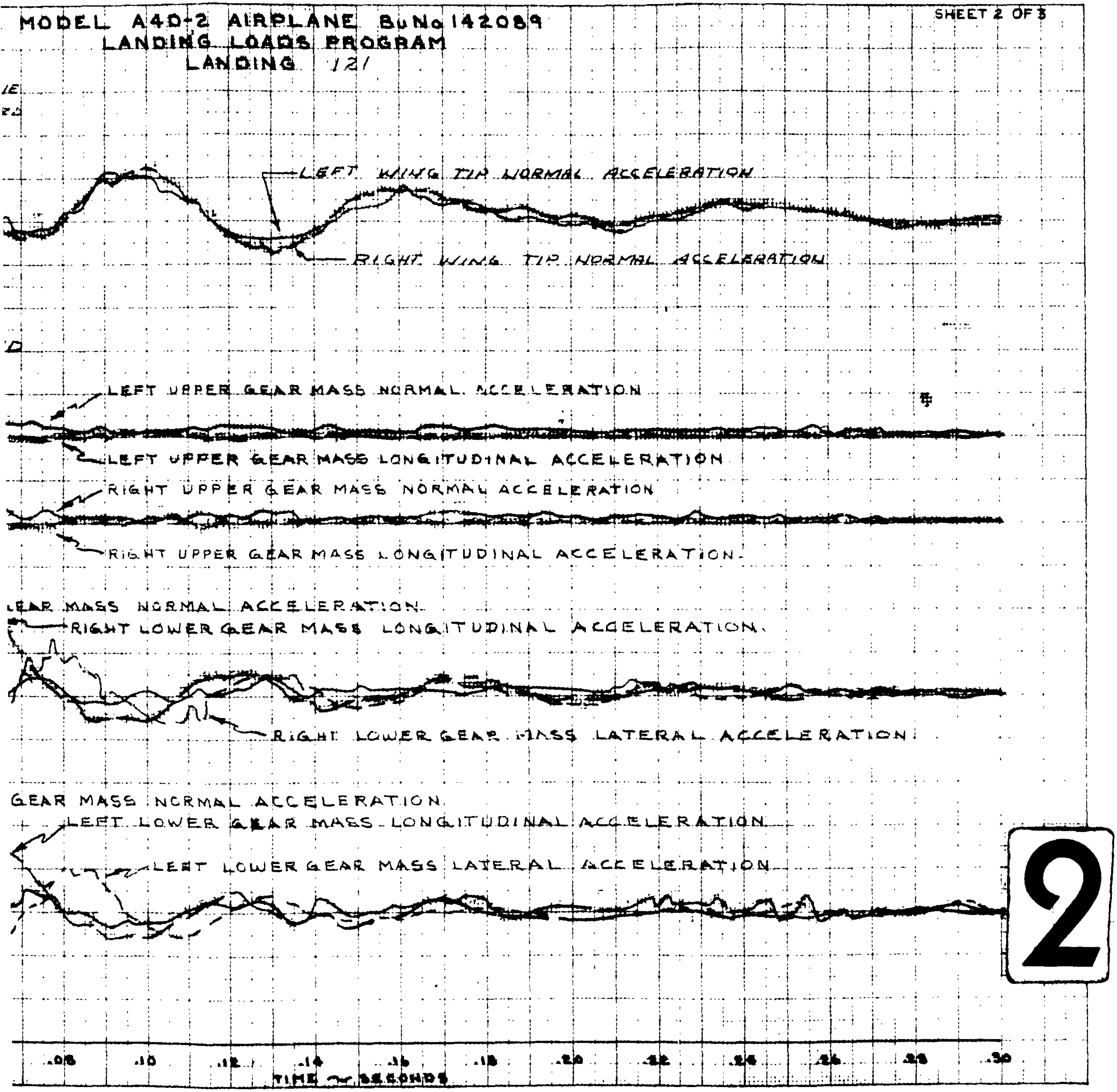
52

PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

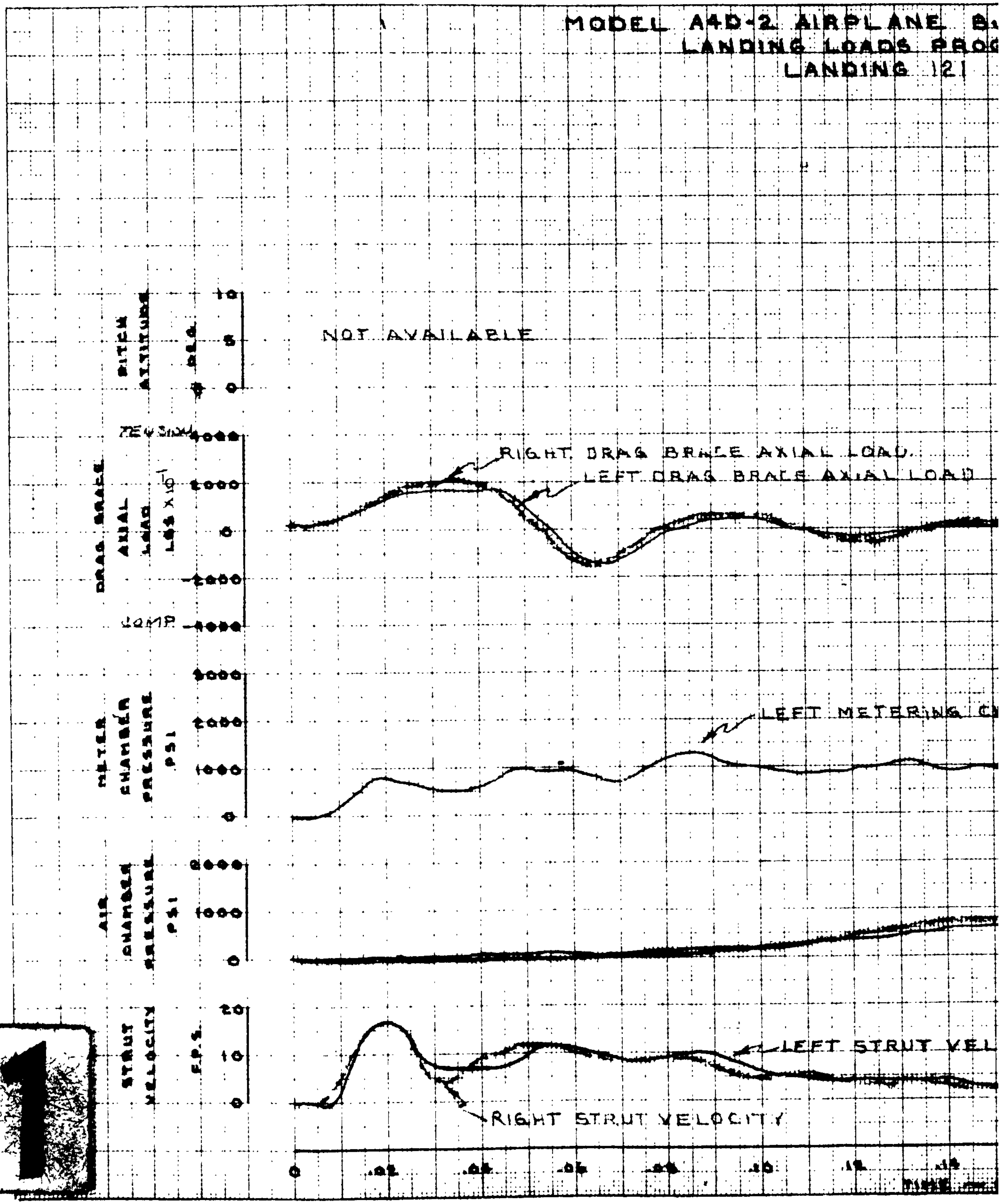
TESTING DIVISION

MODEL: A4D-2
REPORT NO.: DEV-3216



FORM 25 EP-1
(REV. 7-54)

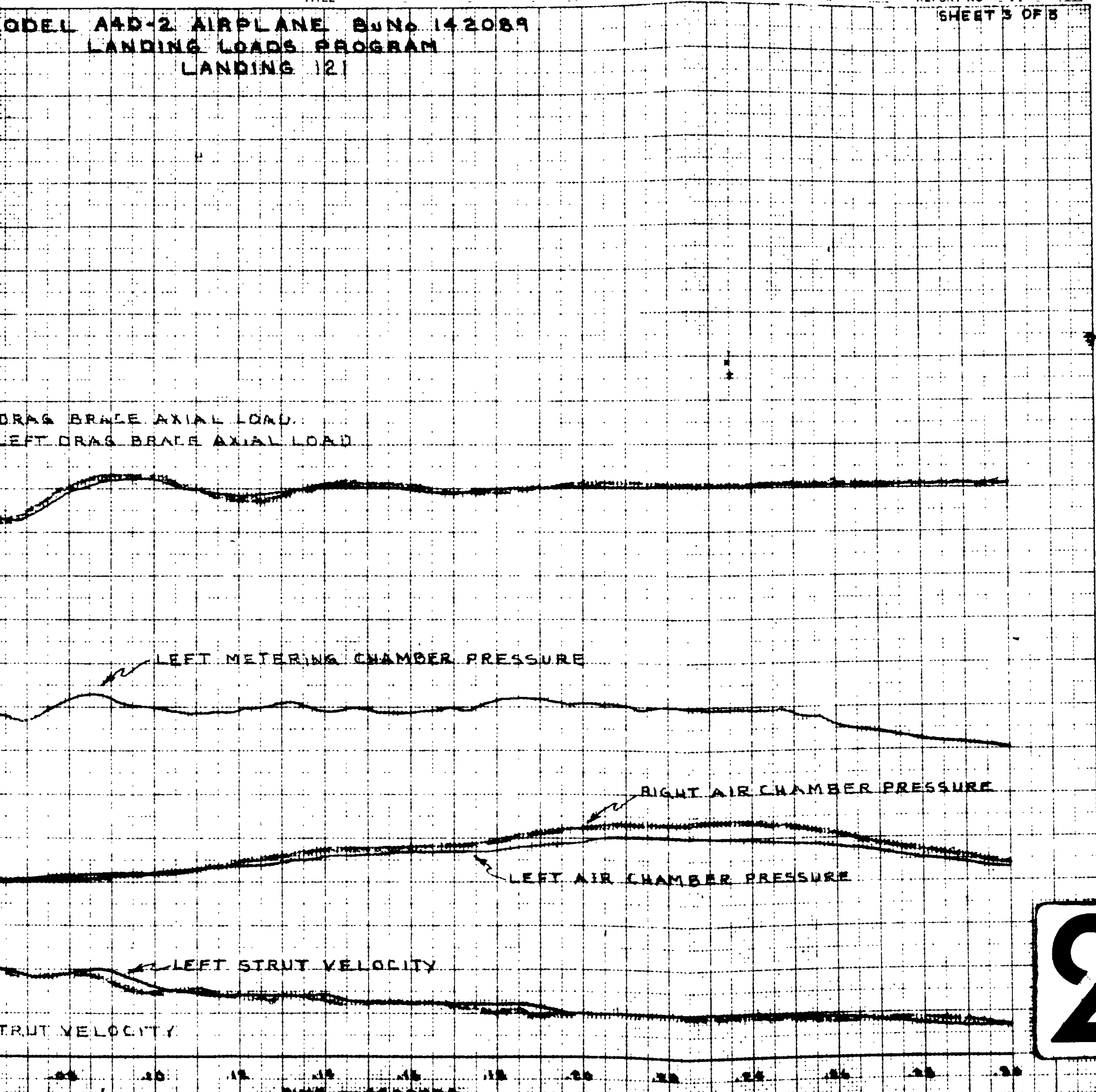
PREPARED BY
CHECKED BY
DATE
TITLE



K-E

92

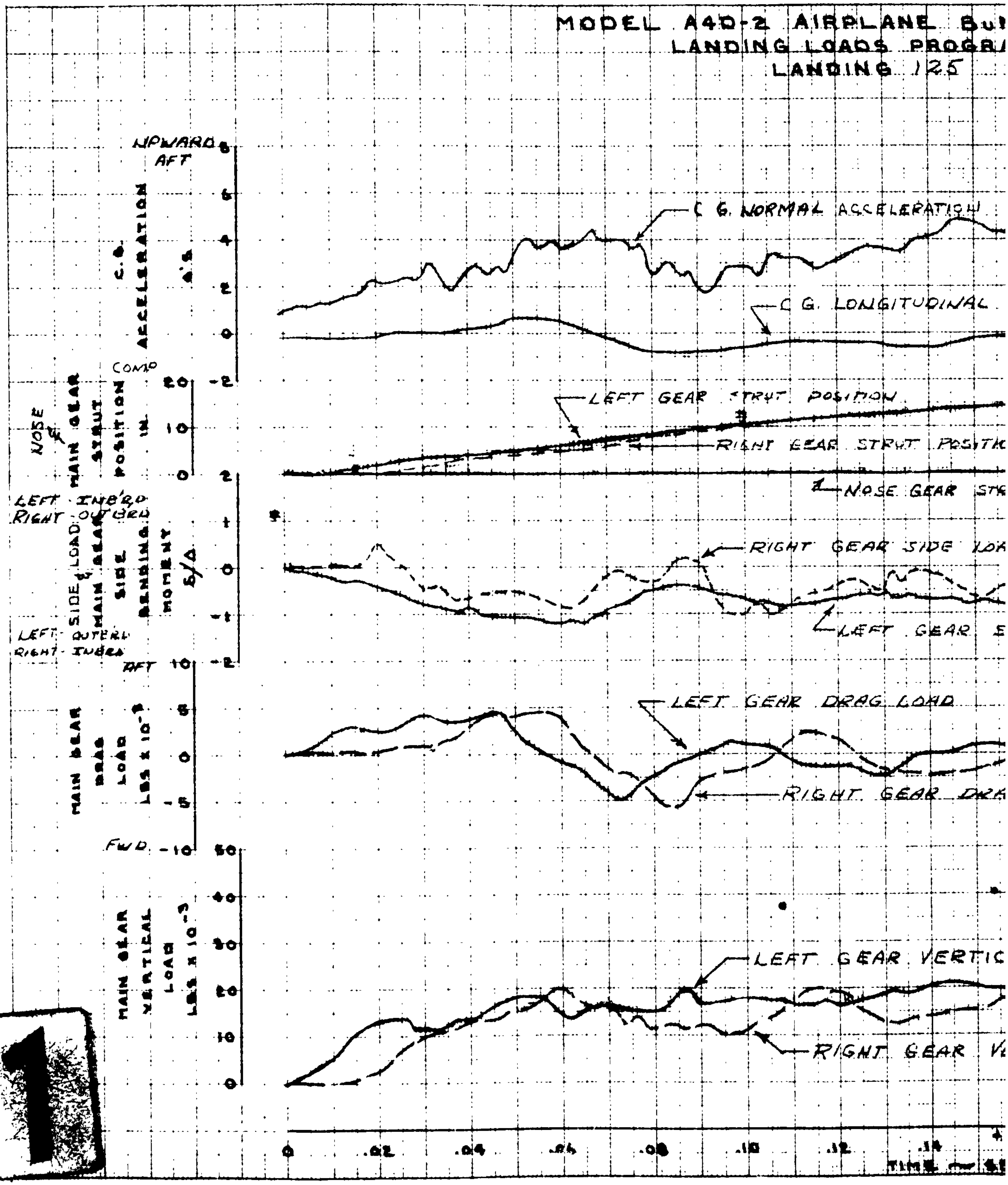
1


MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 121
DRAG BRACE AXIAL LOAD
LEFT DRAG BRACE AXIAL LOAD
LEFT METERING CHAMBER PRESSURE
RIGHT AIR CHAMBER PRESSURE
LEFT AIR CHAMBER PRESSURE
LEFT STRUT VELOCITY
TRUT VELOCITY
TIME — SECONDS

2

FORM 25 DP-1
(REV. 7-54)

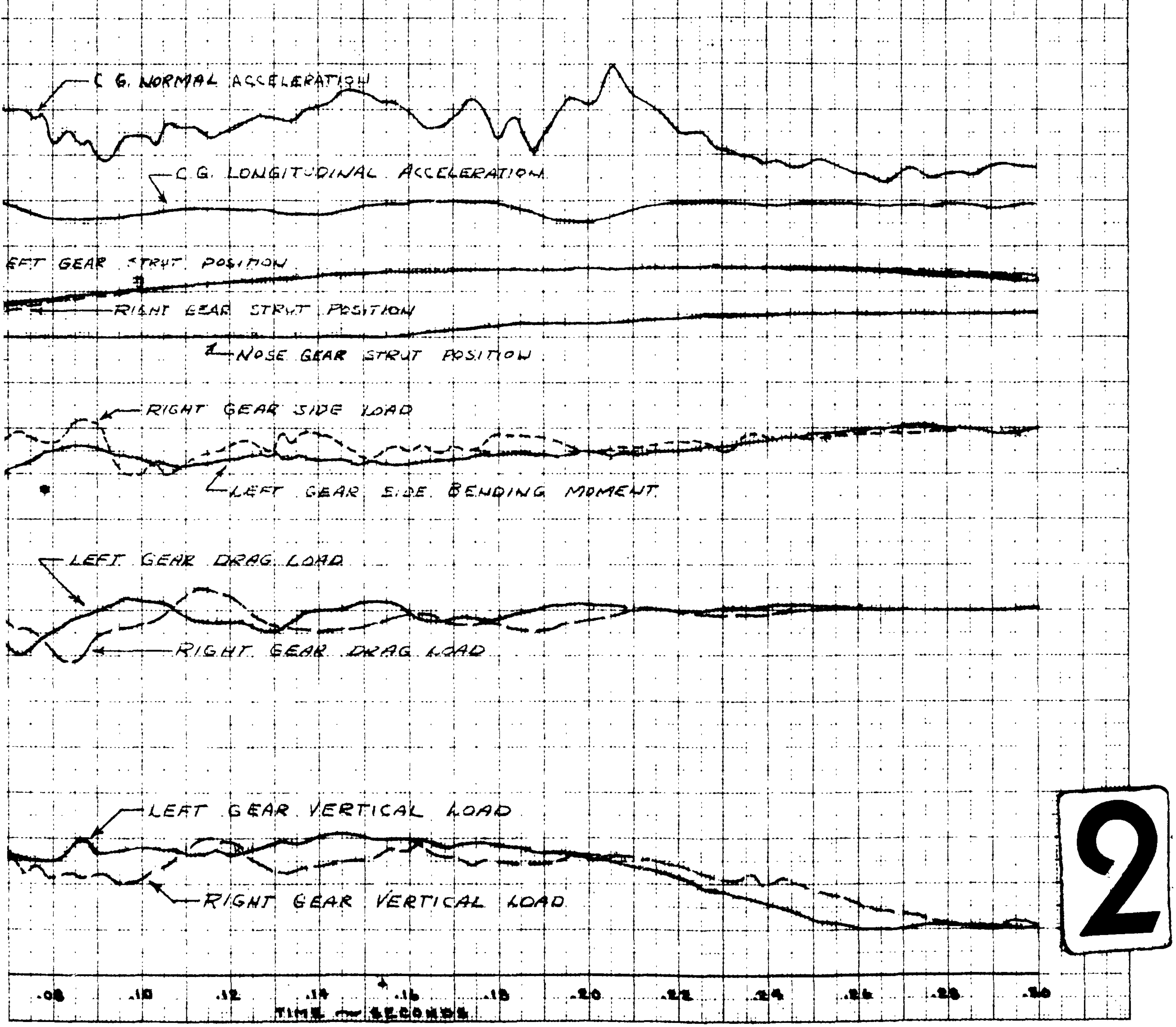
PREPARED BY:
CHECKED BY
DATE
TITLE:



SHEET 1 OF 3

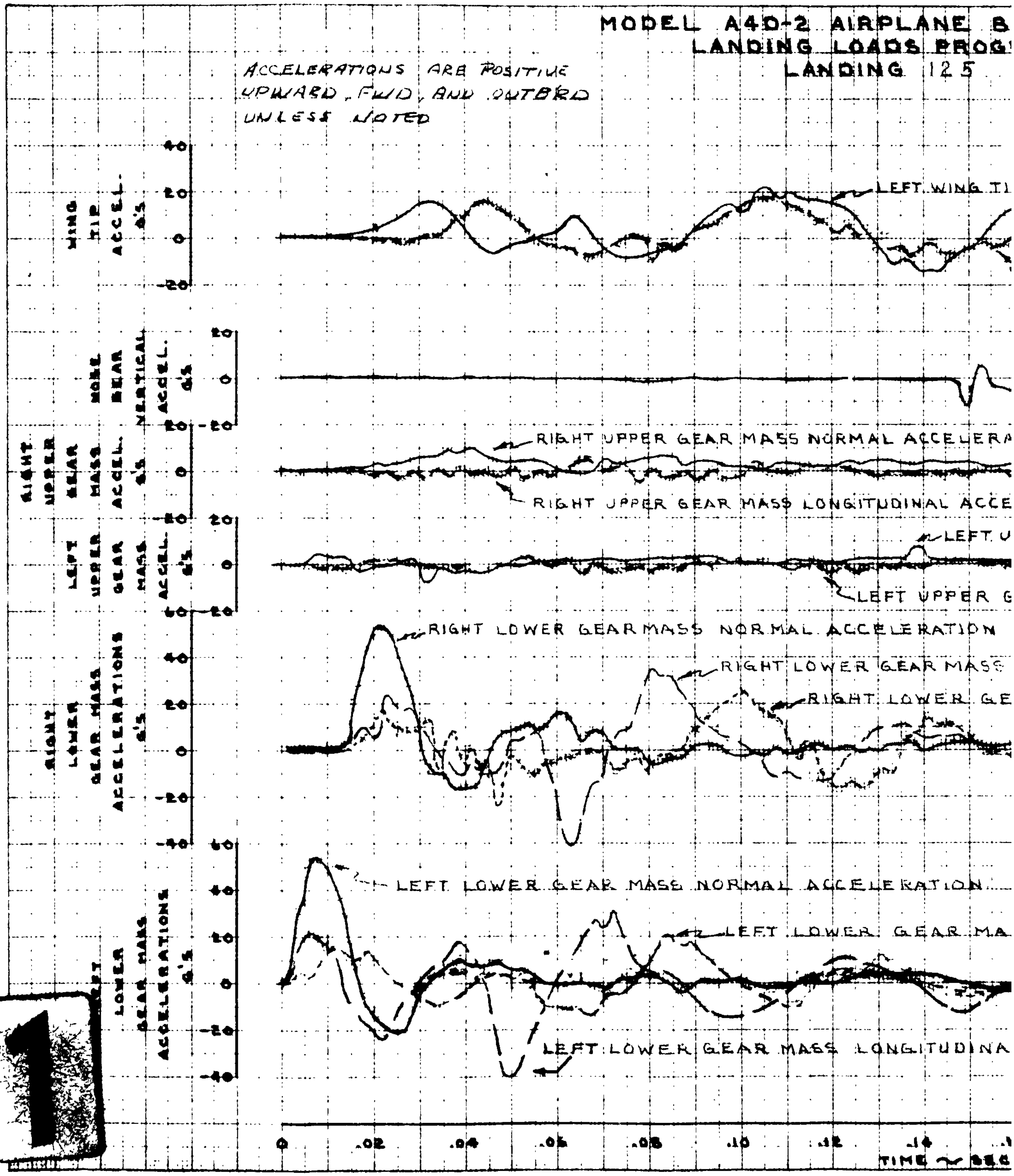
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 125

LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE



FORM 28 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE

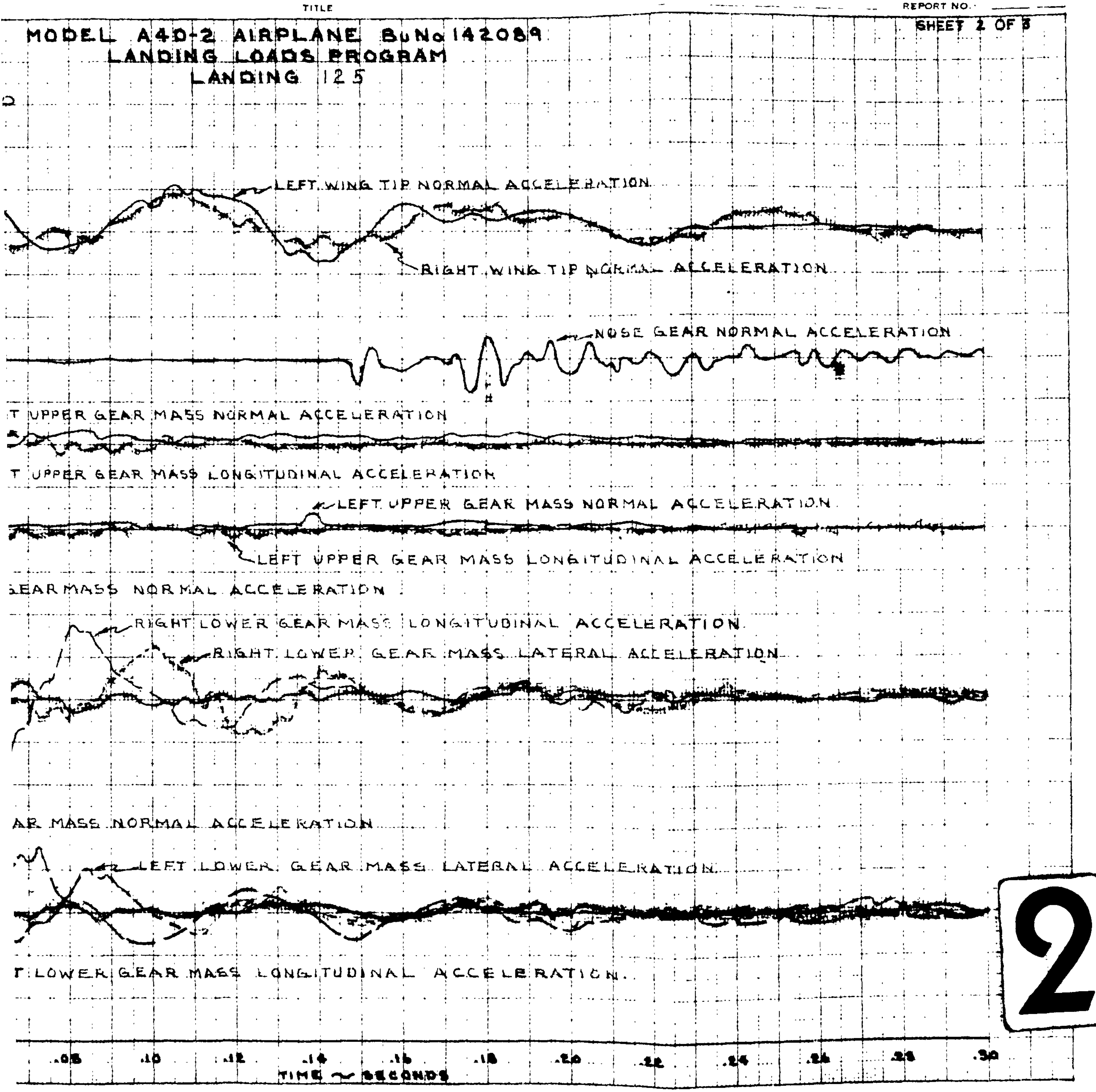


DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE
TITLE

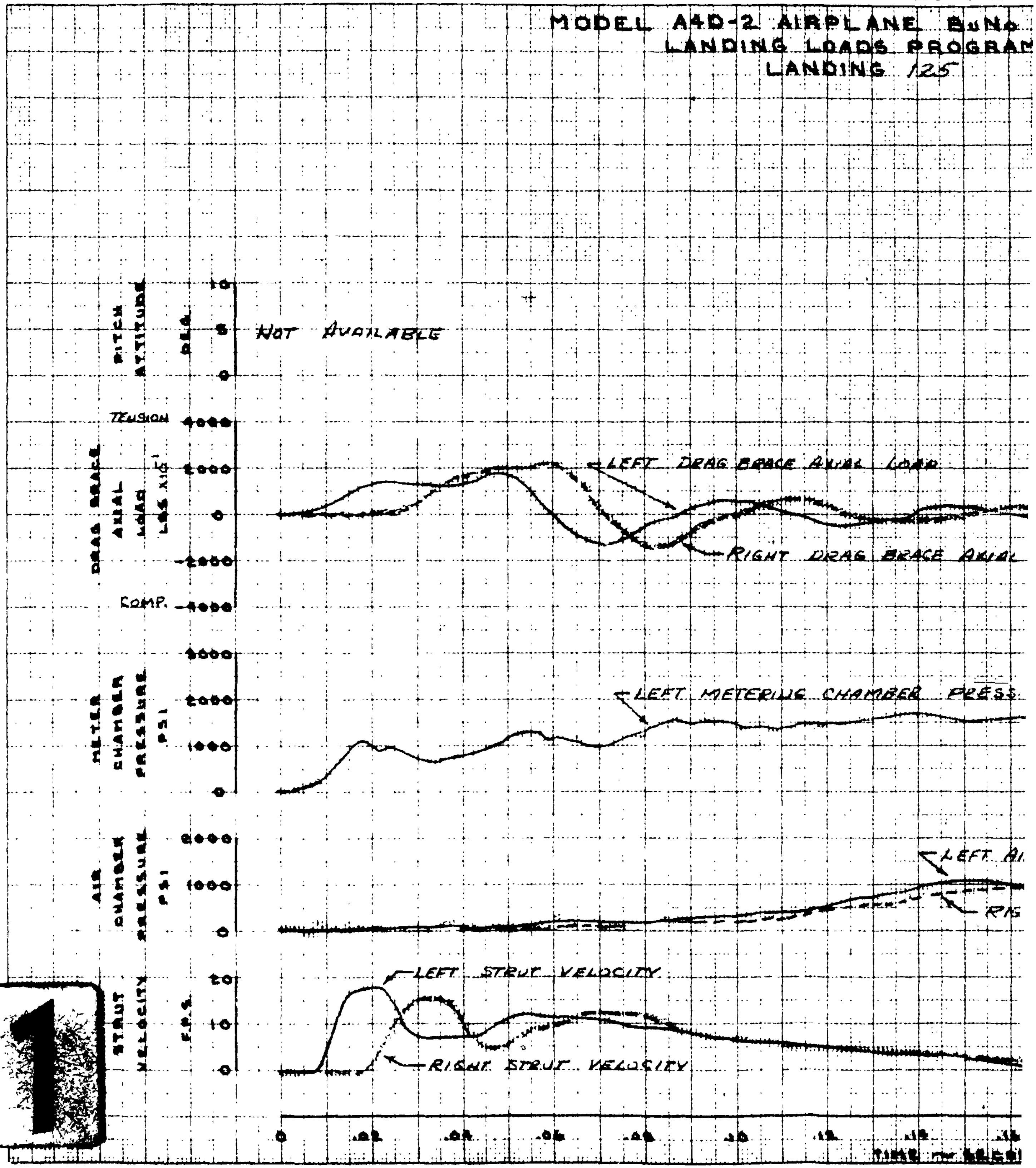
TESTING DIVISION

MODEL A4D-2
REPORT NO.



FORM 29 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



62

1

PREPARED BY:
CHECKED BY
DATE
TITLE

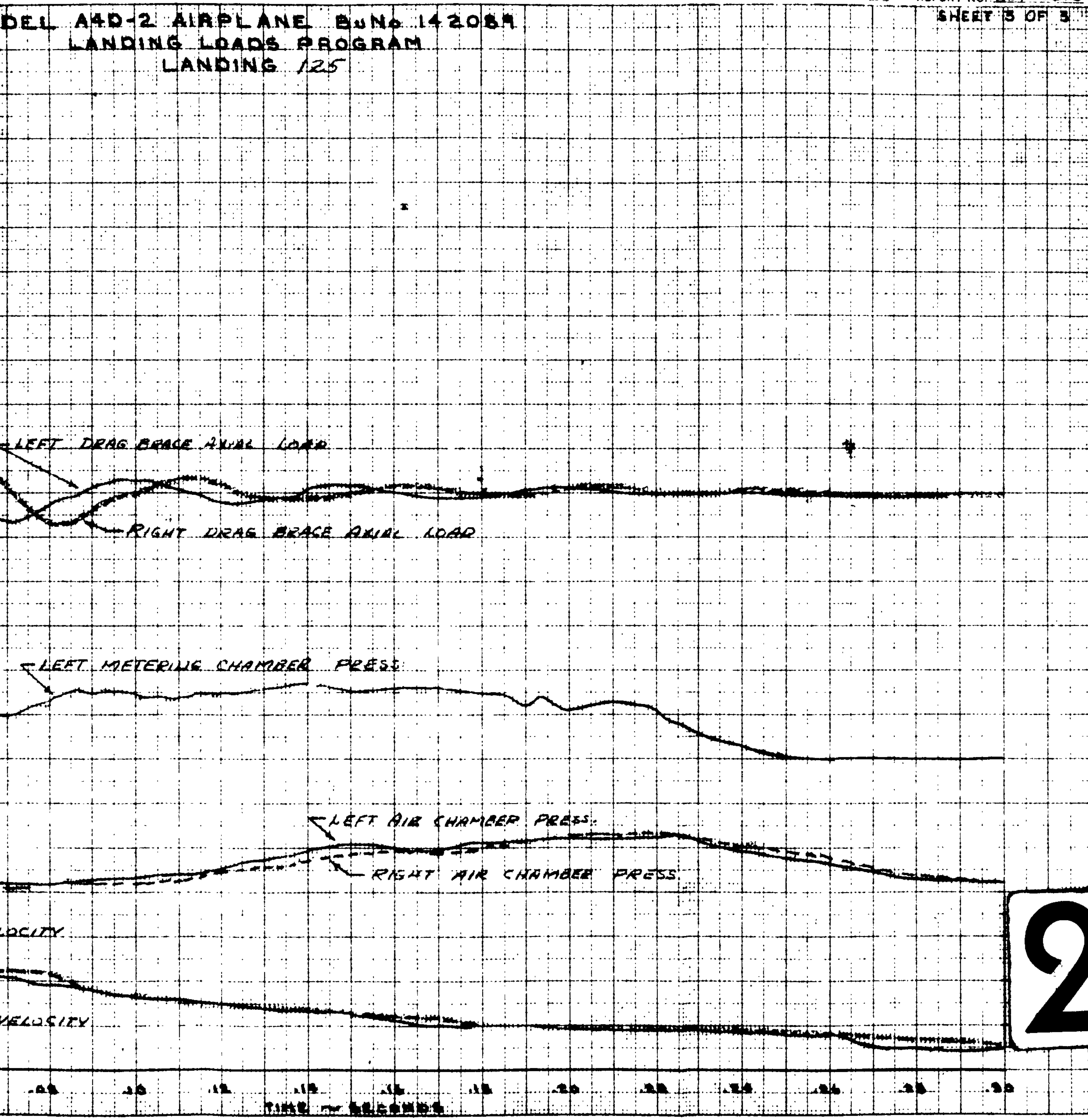
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 84.6

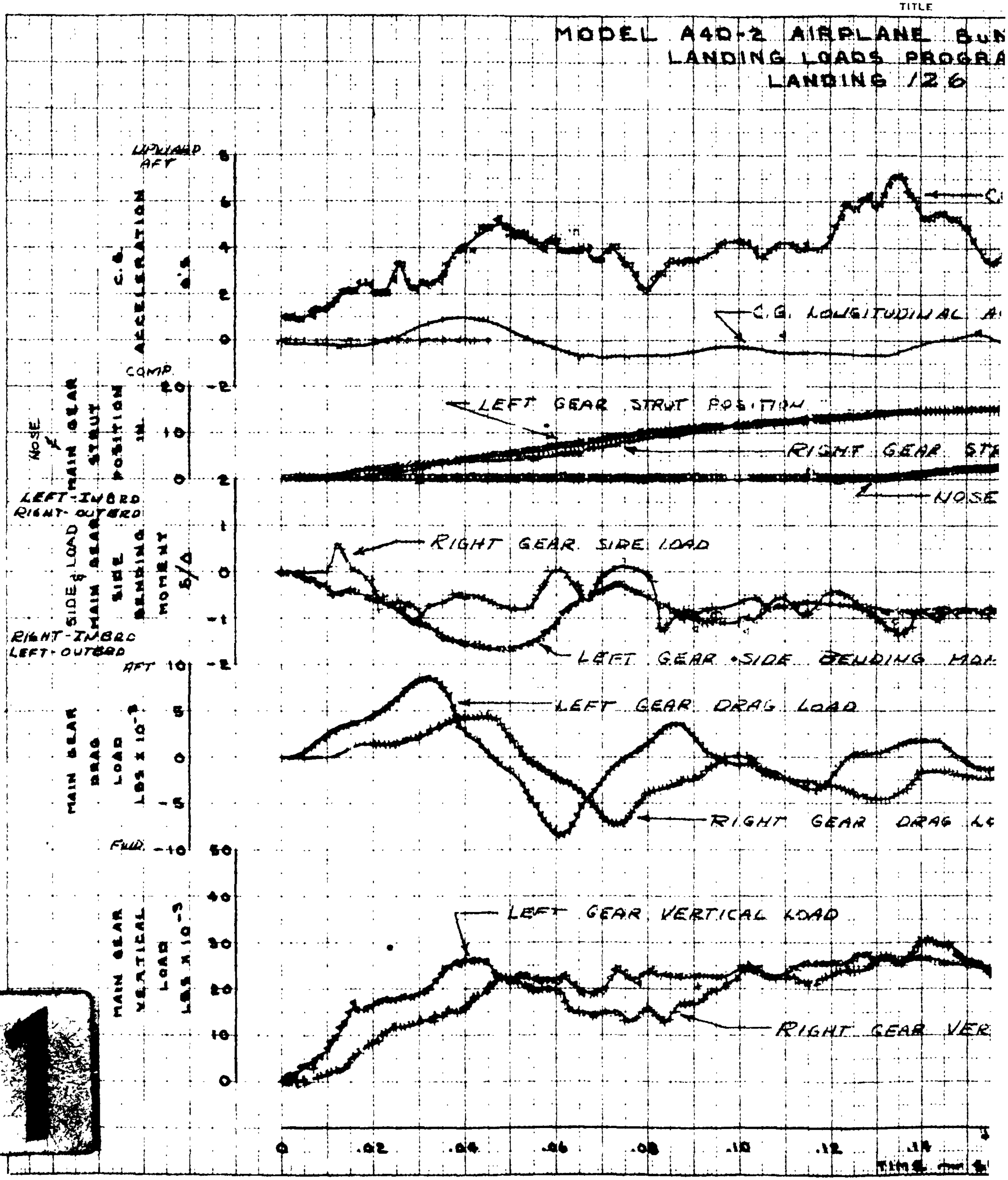
MODEL: A4D-2

REPORT NO. DEV-3616



FORM 25 BP-1
(REV. 7-64)

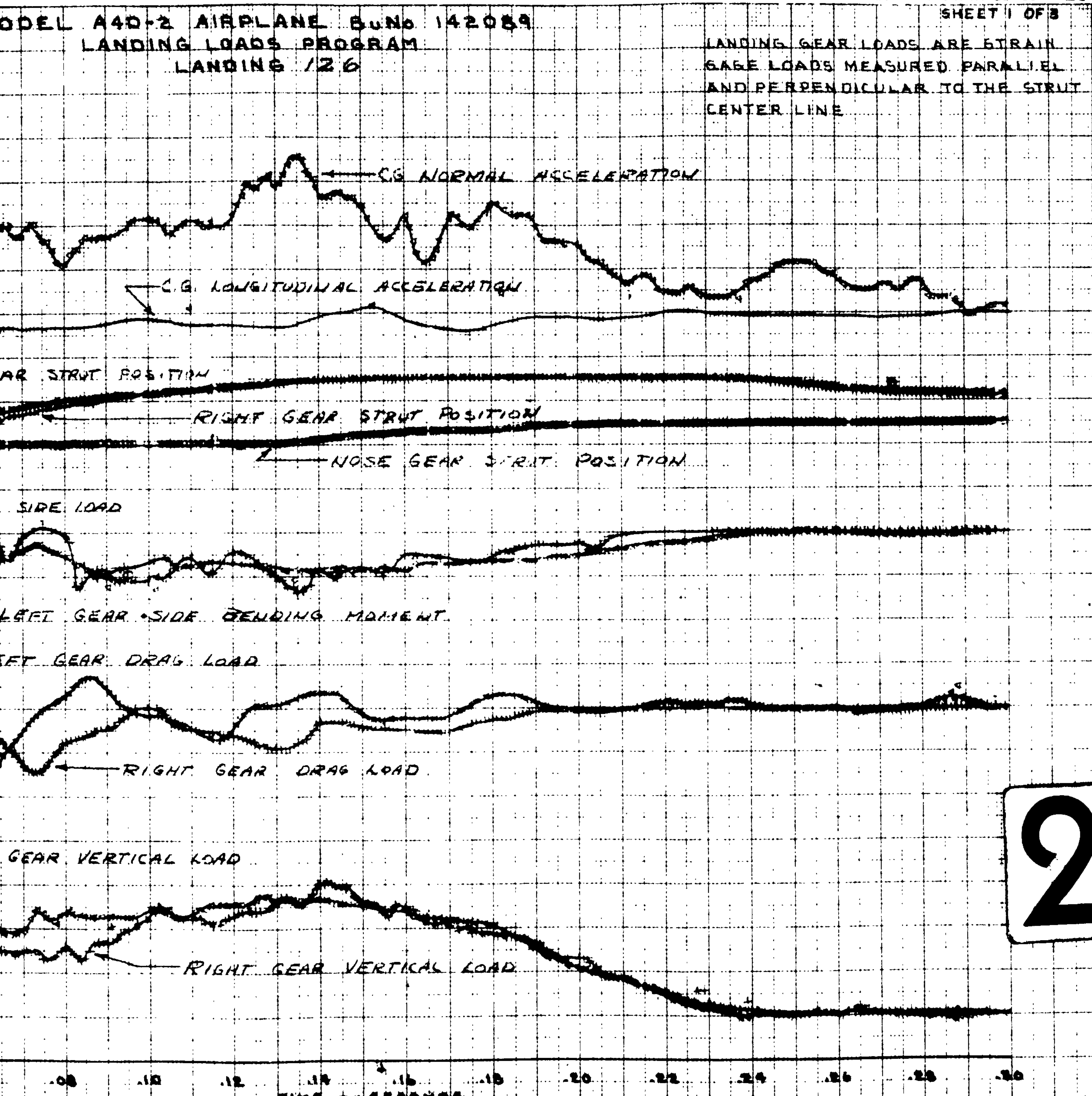
PREPARED BY
CHECKED BY
DATE
TITLE



K-E

30

1

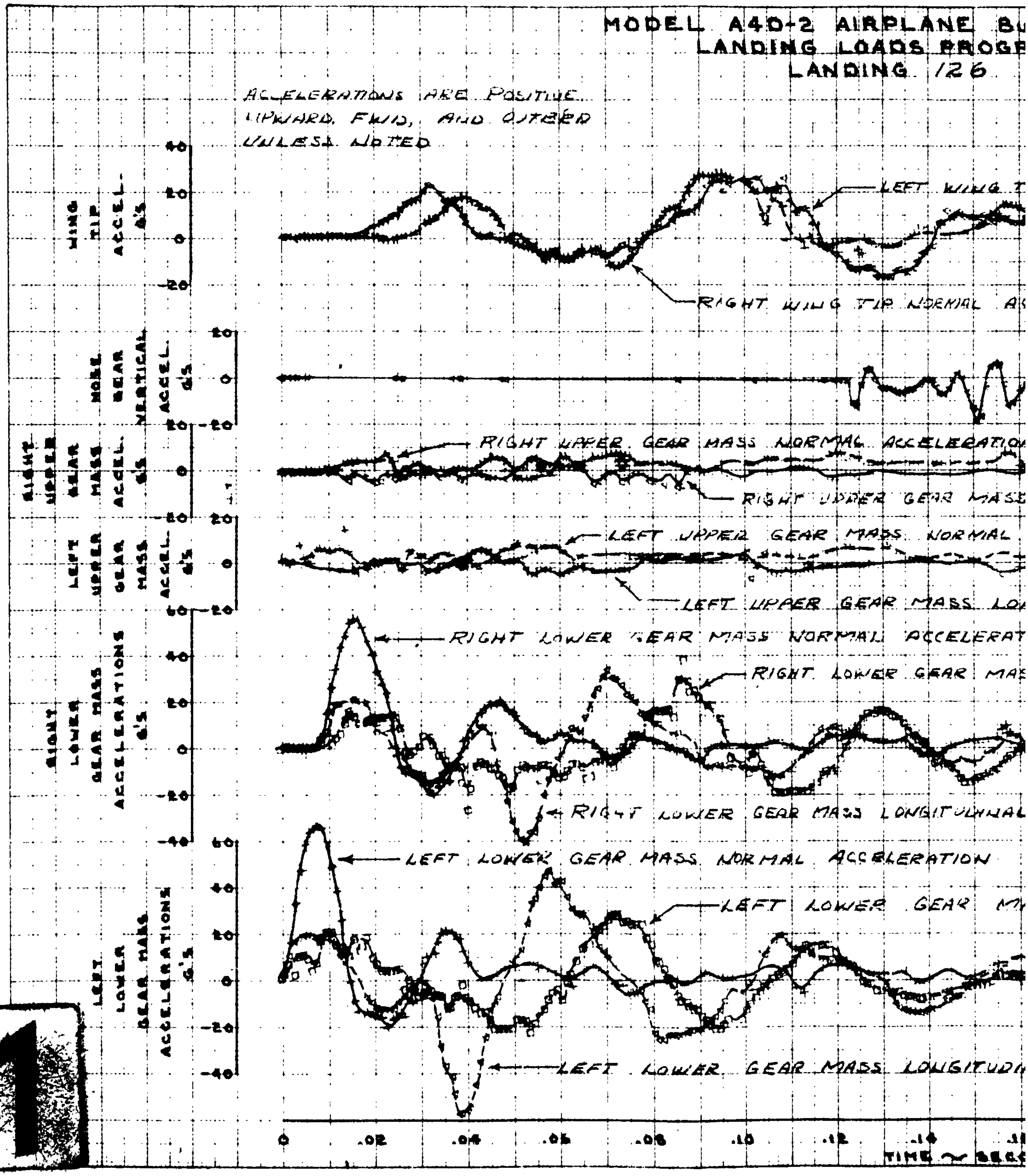


ODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 126
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE
C.G. NORMAL ACCELERATION
C.G. LONGITUDINAL ACCELERATION
AR STRUT POSITION
RIGHT GEAR STRUT POSITION
NOSE GEAR STRUT POSITION
SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
EFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
GEAR VERTICAL LOAD
RIGHT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME — SECONDS

2

FORM 28 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



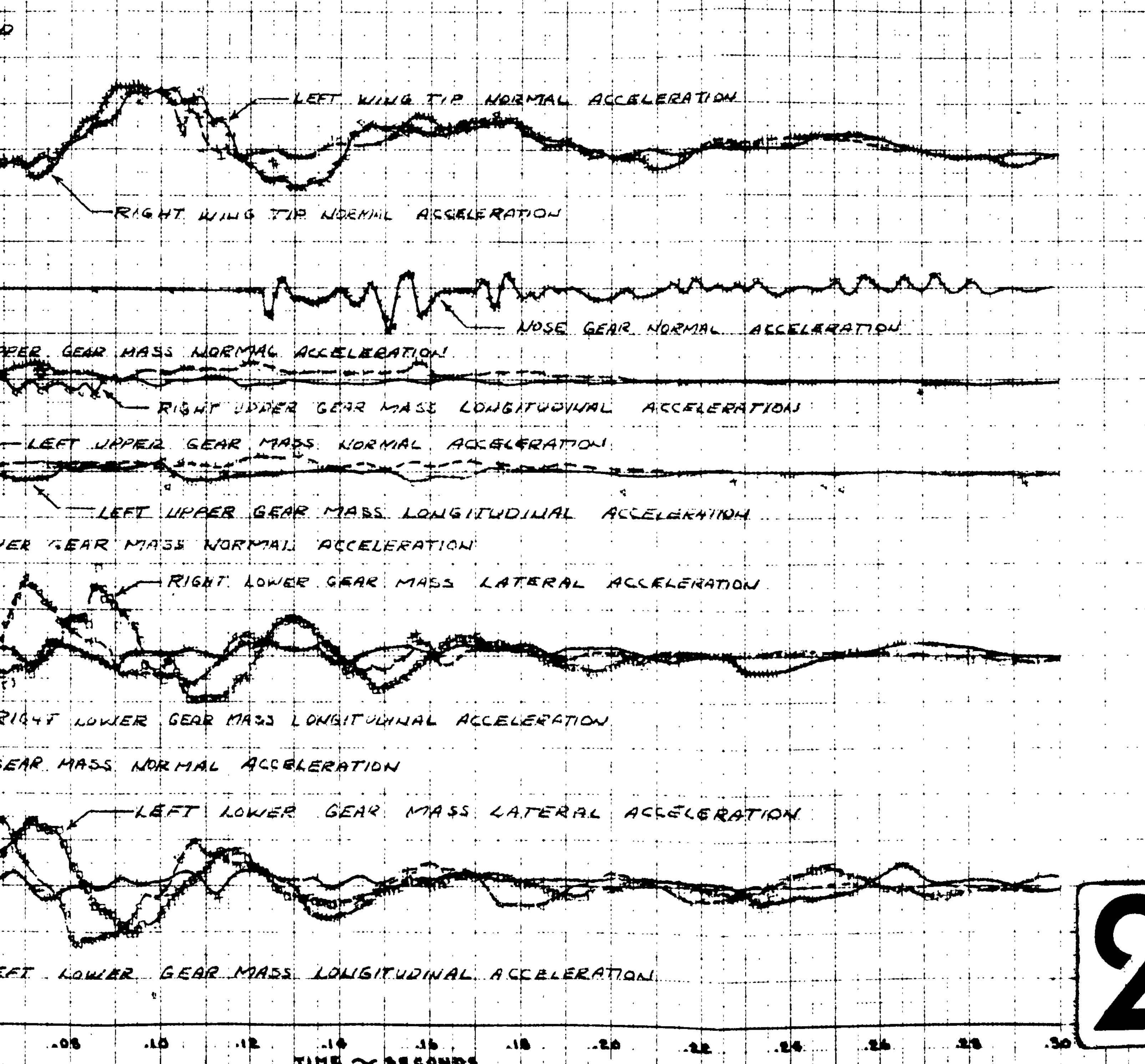
18

1

PREPARED BY:	DOUGLAS AIRCRAFT COMPANY, INC.		PAGE: 848
CHECKED BY	TESTING	DIVISION	MODEL A4D-2
DATE			
TITLE			REPORT NO.: DEV 3616

SHEET 2 OF 5

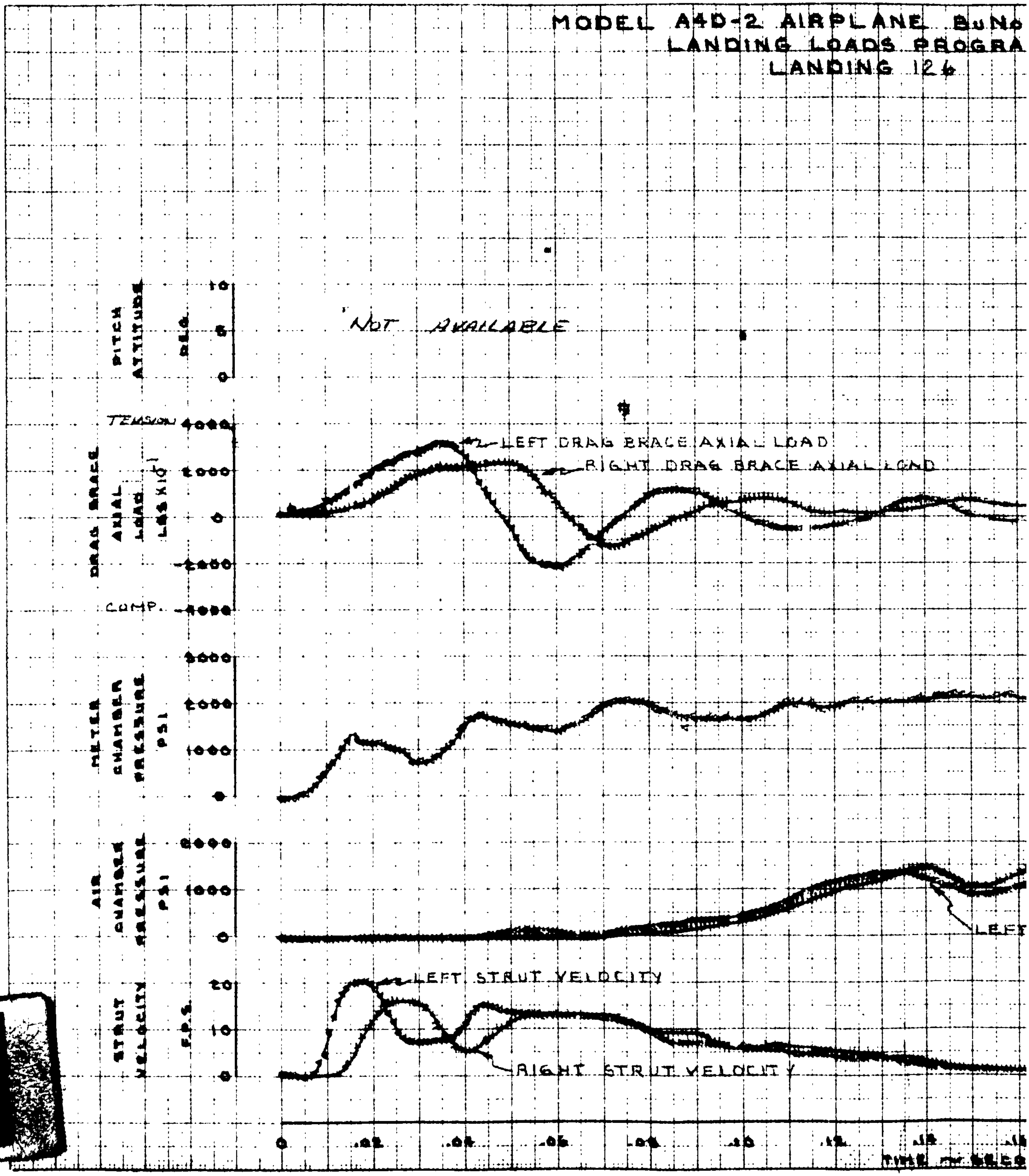
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 126



2

FORM 85 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



K-E ALBANENE

PREPARED BY

CHECKED BY

DATE

TITLE

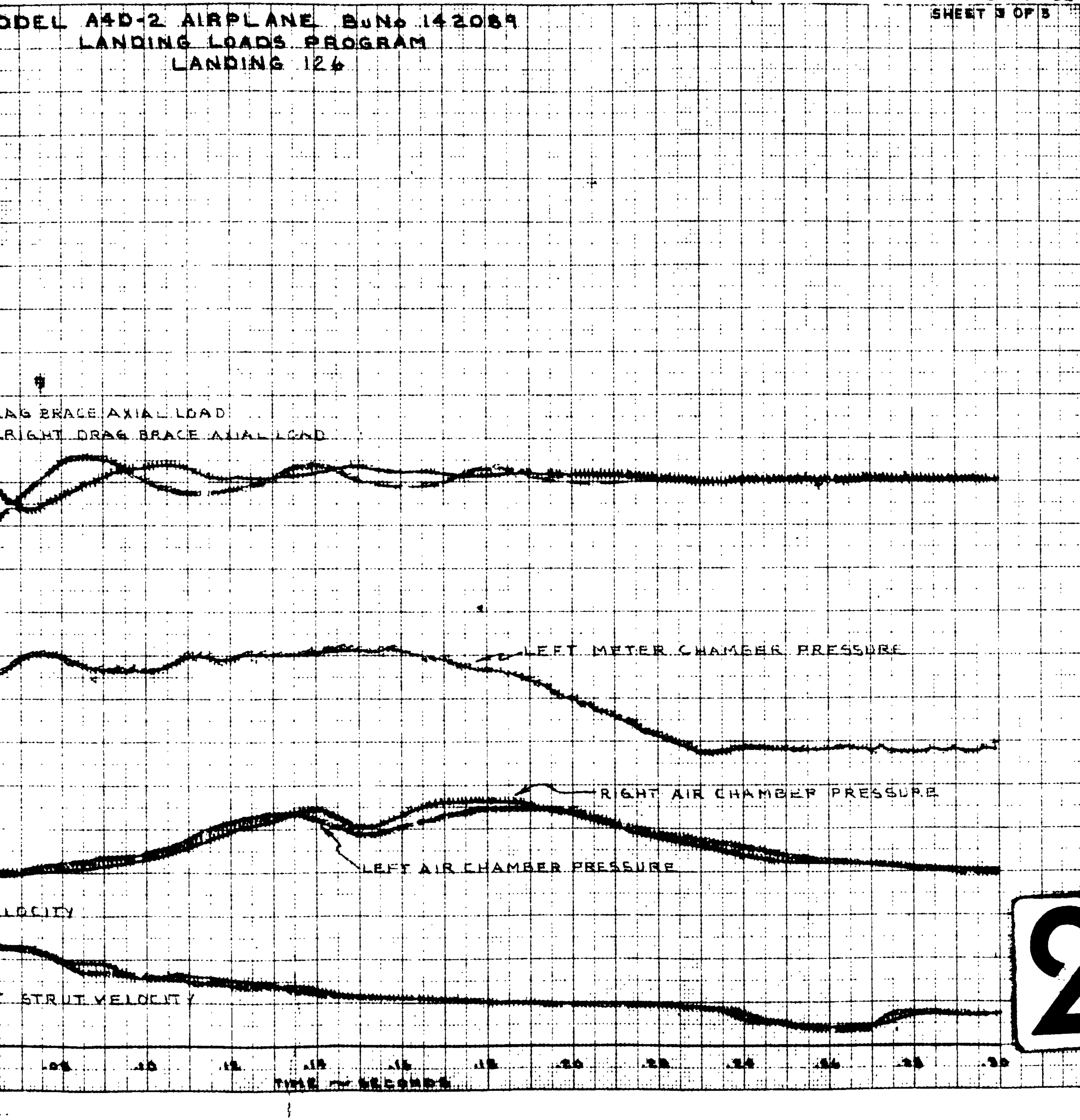
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 849

MODEL A4D-2

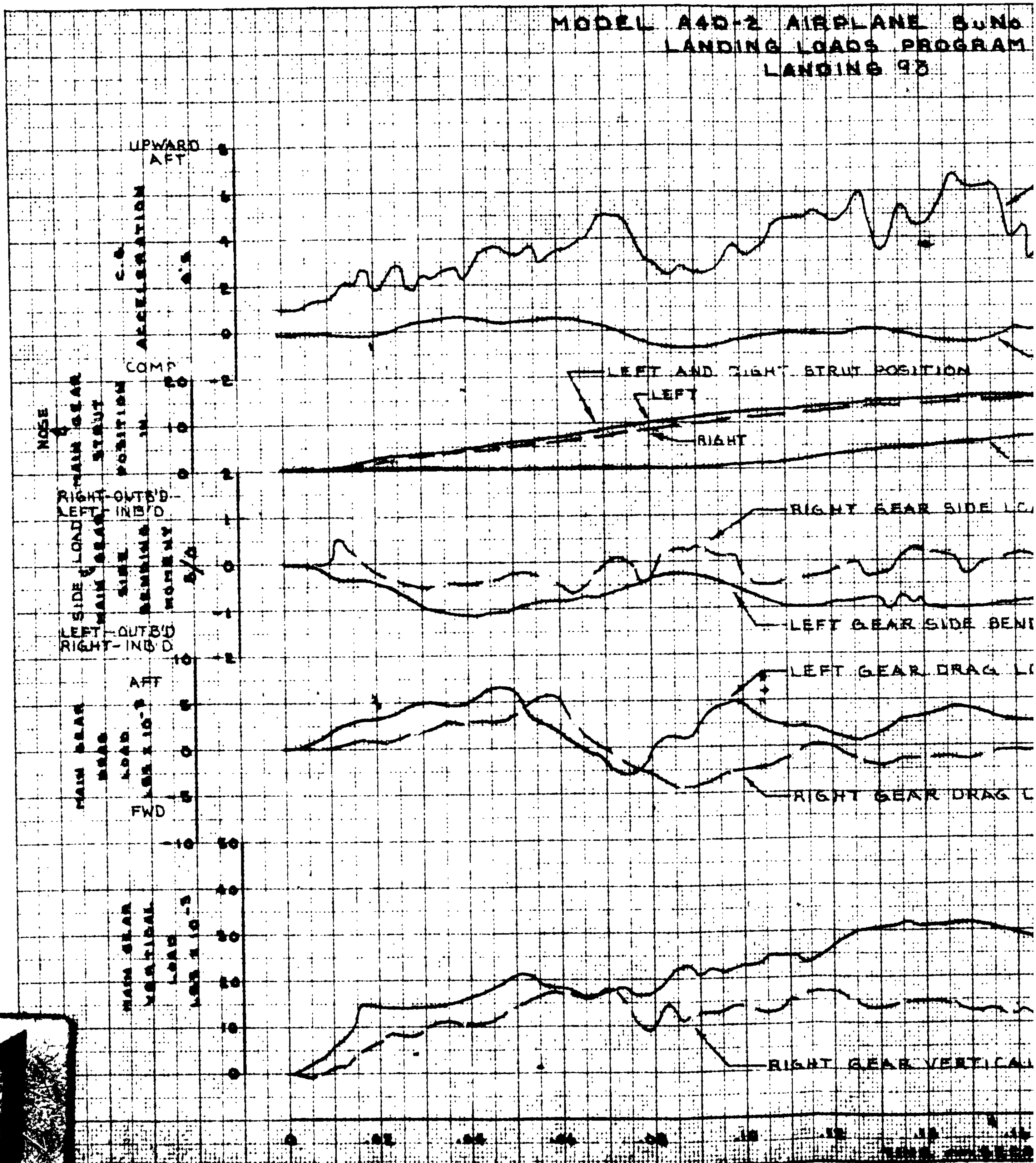
REPORT NO. DEV-3616



2

FORM 25 SP-1
(REV. 7-64)

PREPARED BY:
CHECKED BY:
DATE
TITLE:



K+E ALBANENE

33

1

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

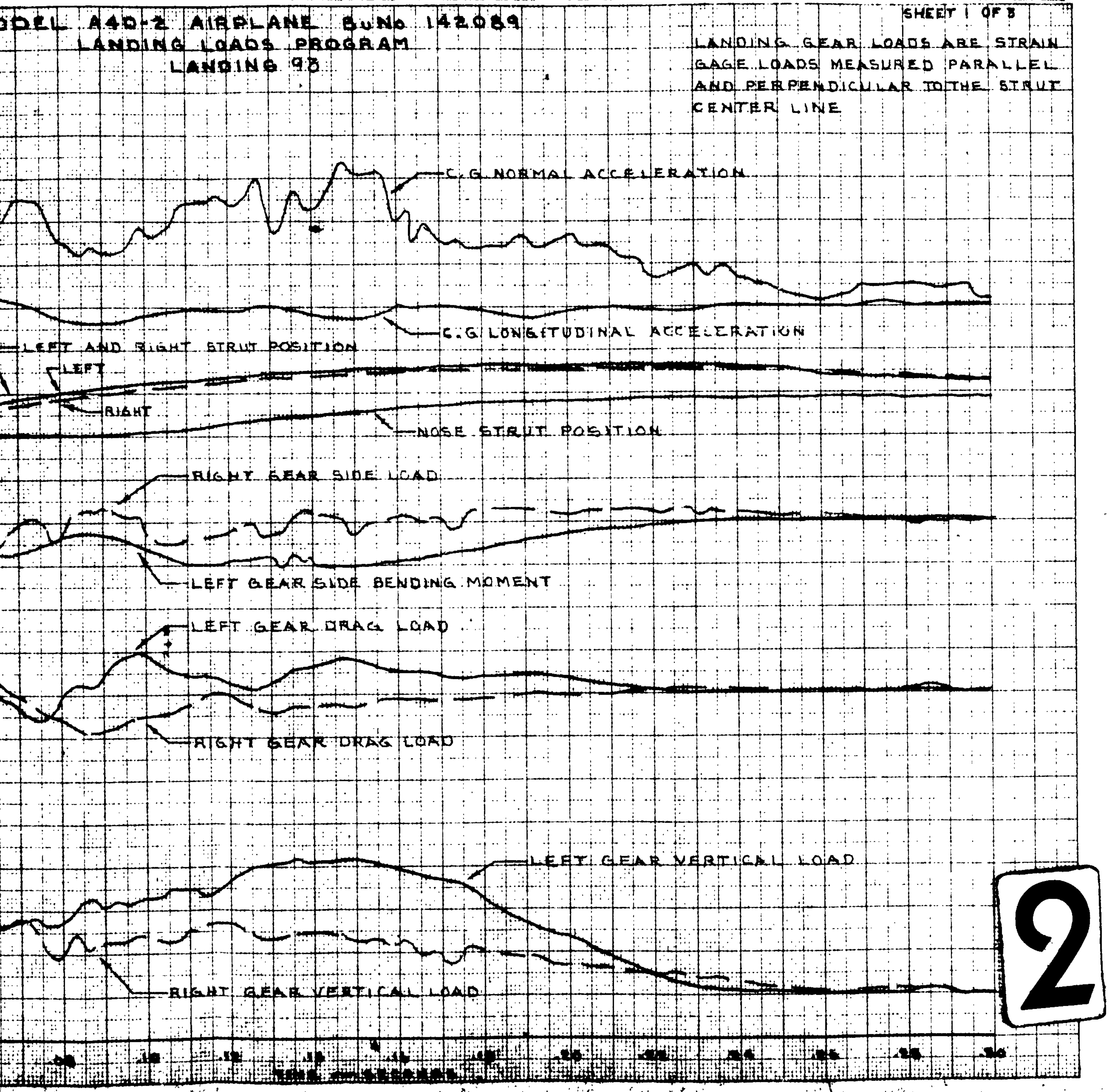
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.4.10

MODEL A4D-2

REPORT NO. DEV-3616



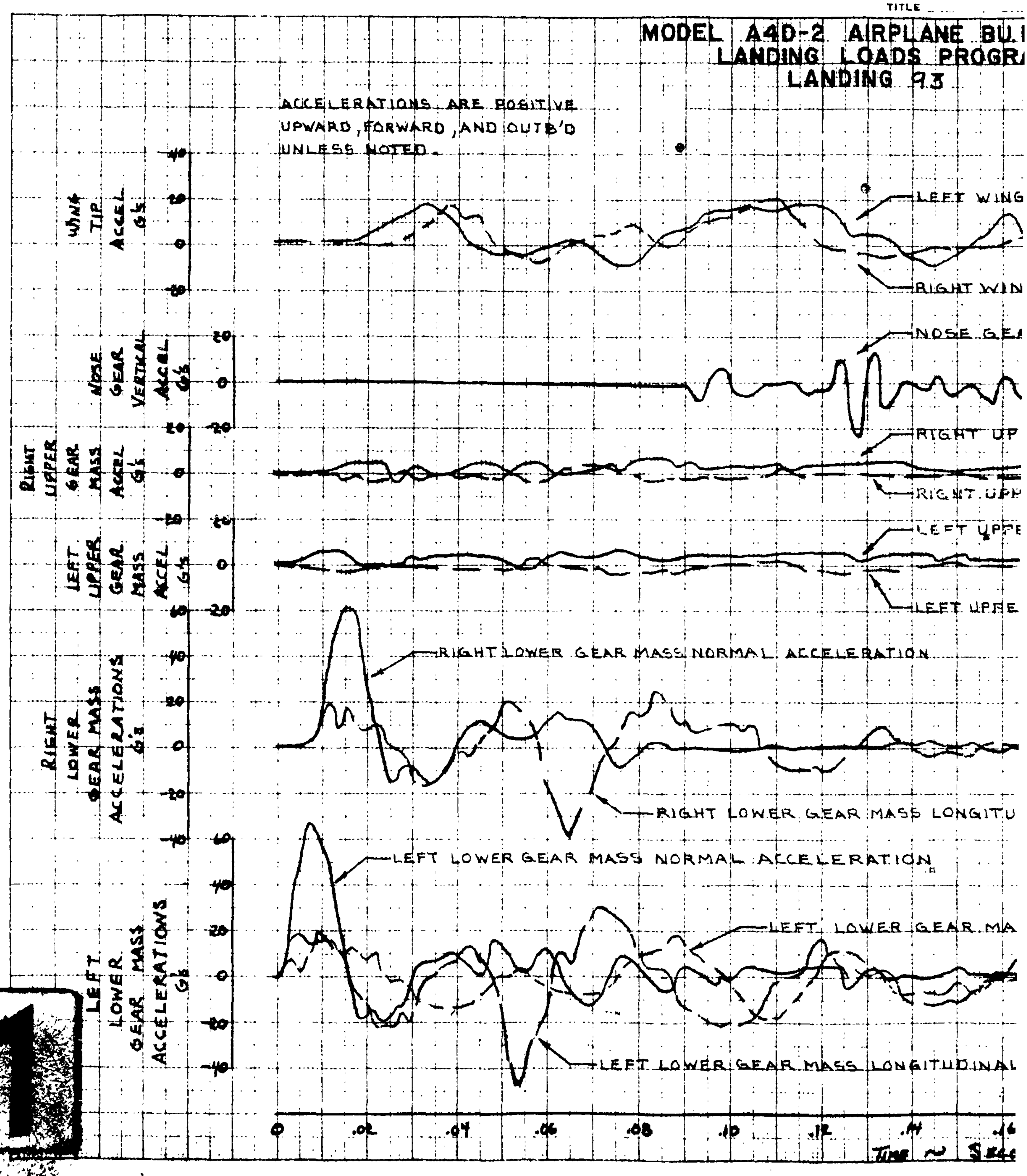
FORM (REV. 7-54)

PREPARED BY:

CHECKED BY:

DATE

TITLE

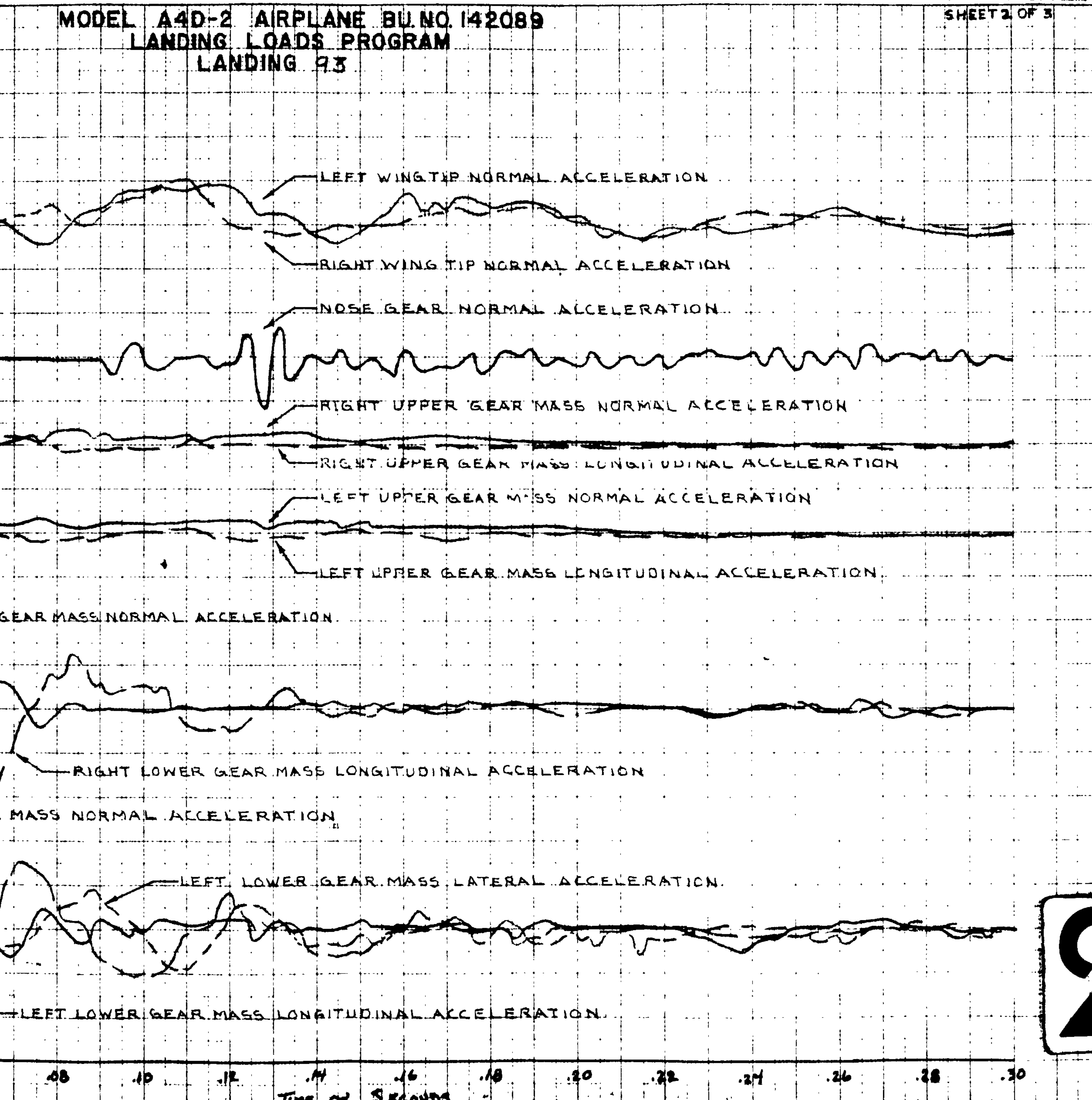


34

PREPARED BY:
CHECKED BY:
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.
FLIGHT TEST-AIRCRAFT DIVISION

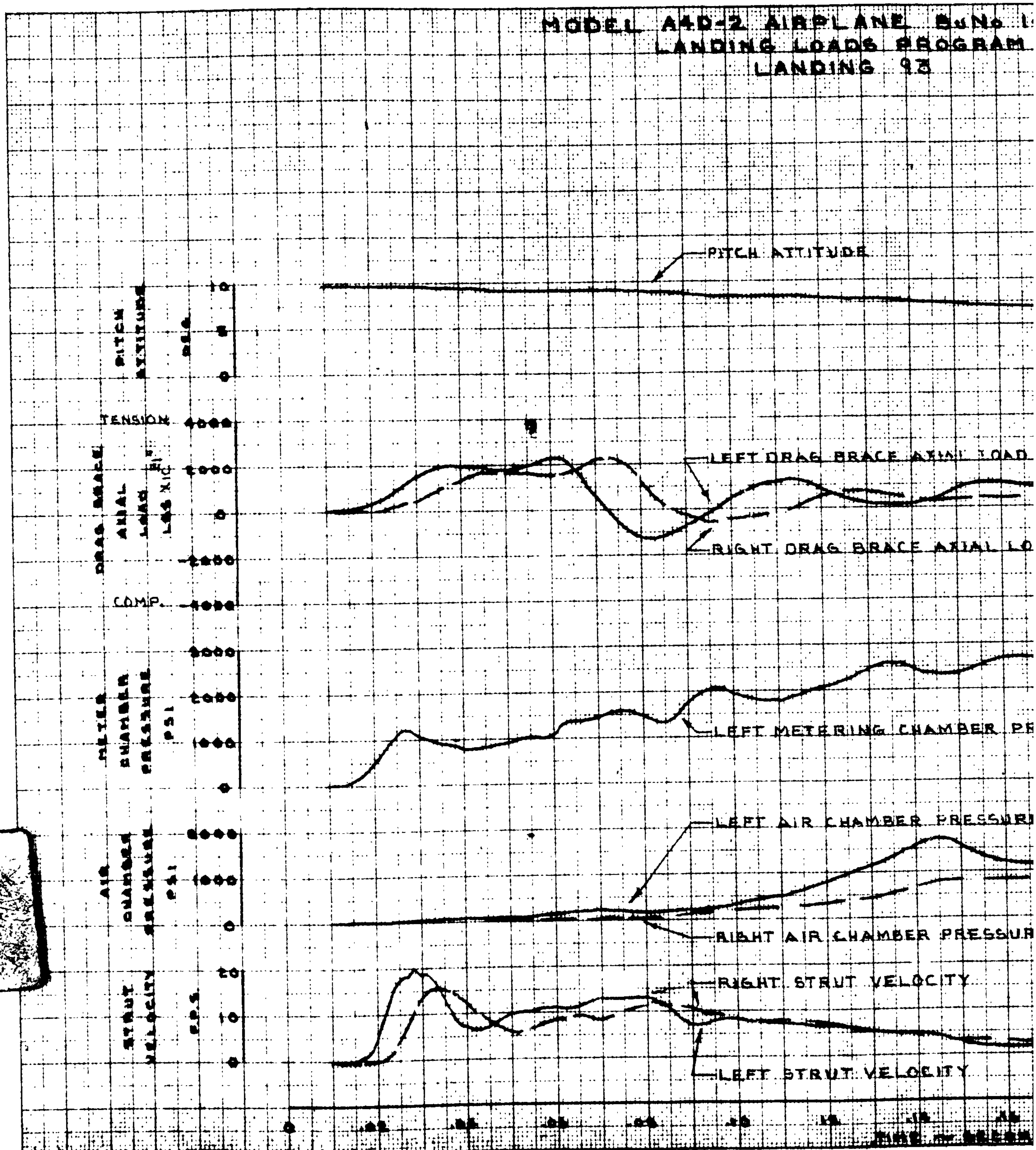
PAGE: E 4 11
MODEL: A4D-2
REPORT NO.: DEV-3616



2

FORM 35 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:



K-E ALBANENE

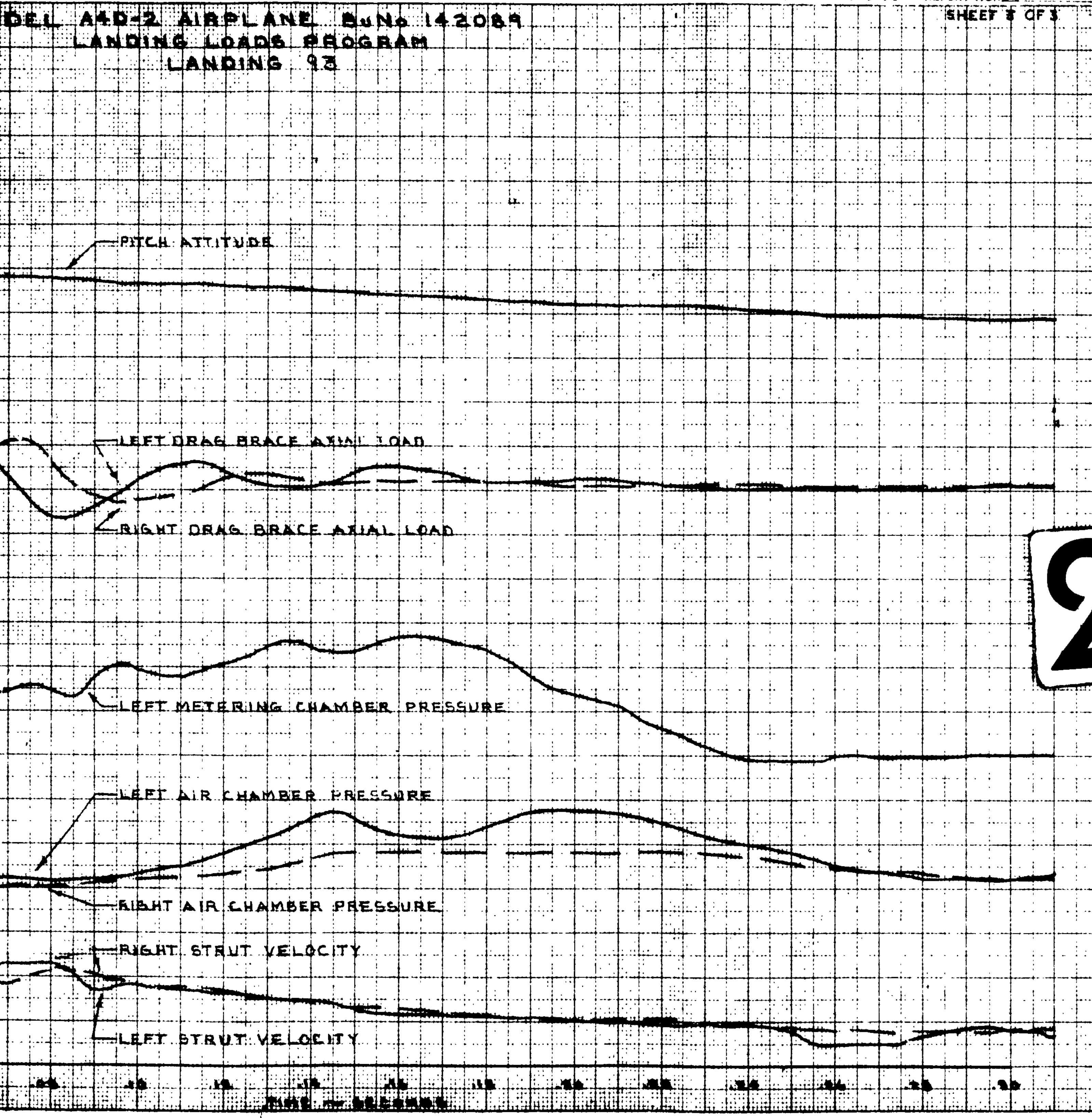
1

35

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.
TESTING DIVISION

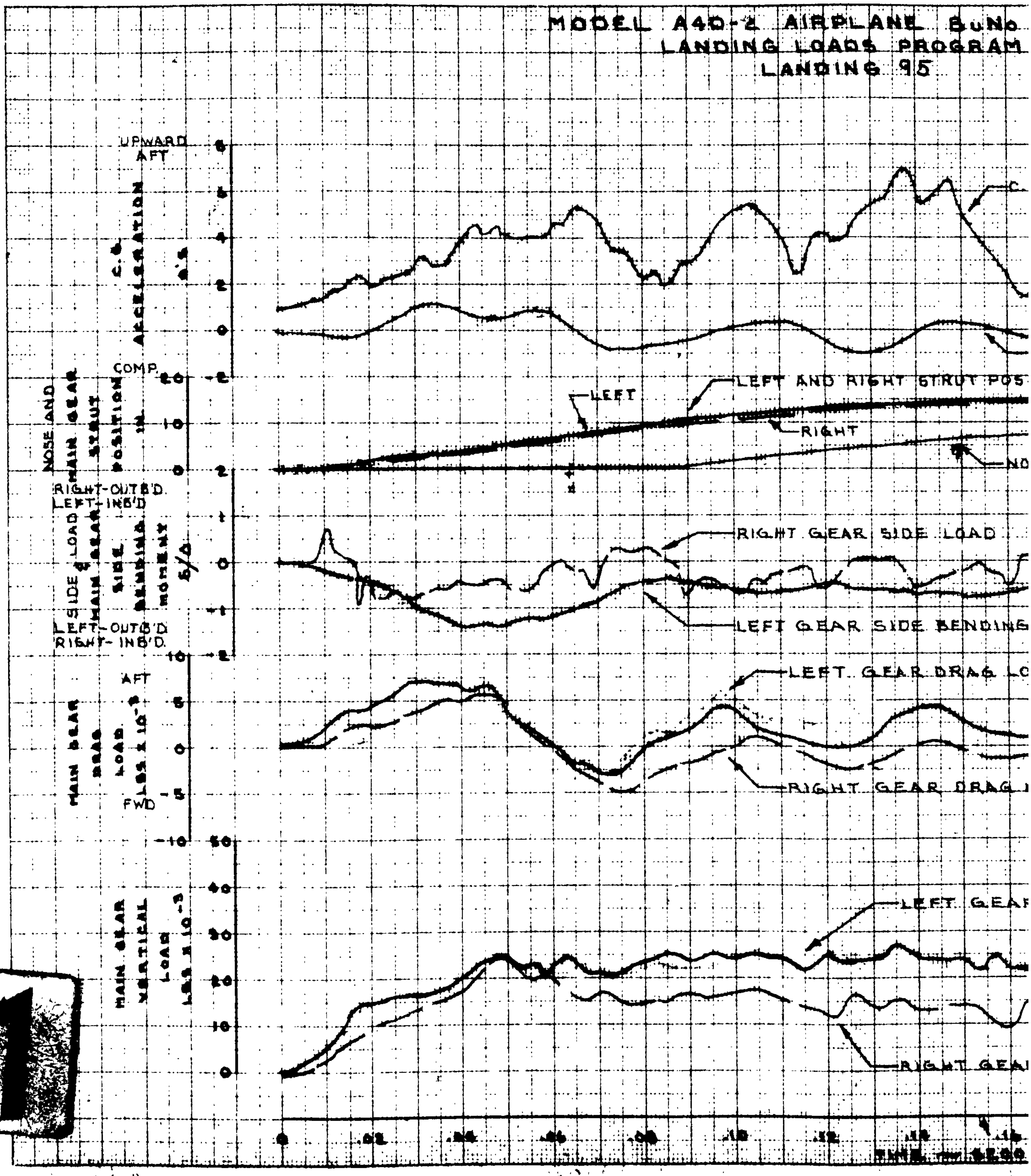
PAGE:
MODEL: A4D-2
REPORT NO. DEV-3616



2

FORM 25 TP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE
TITLE:



K-E ALBANENE

36

1

PREPARED BY:

CHECKED BY:

DATE

TITLE:

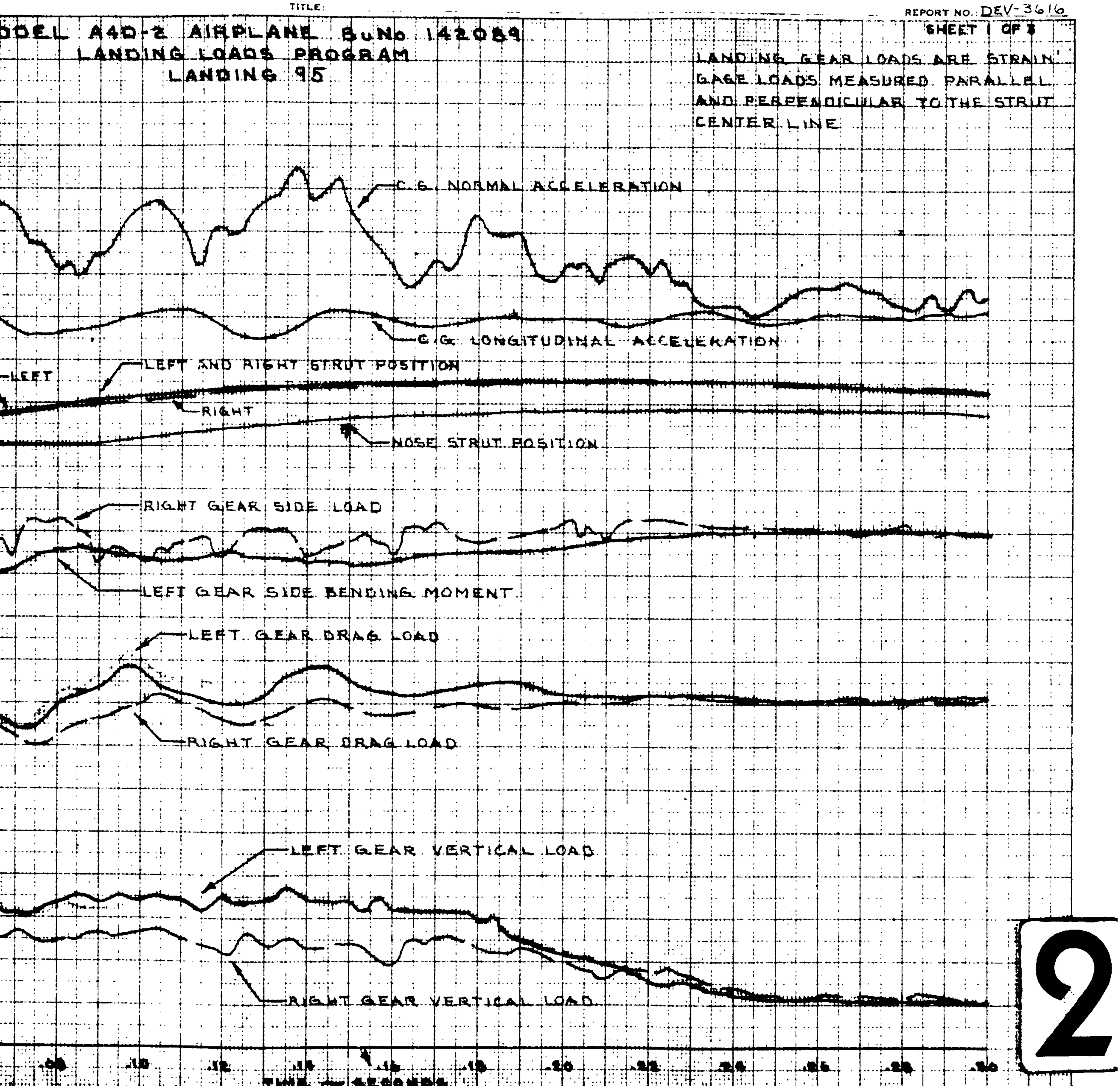
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 84.13

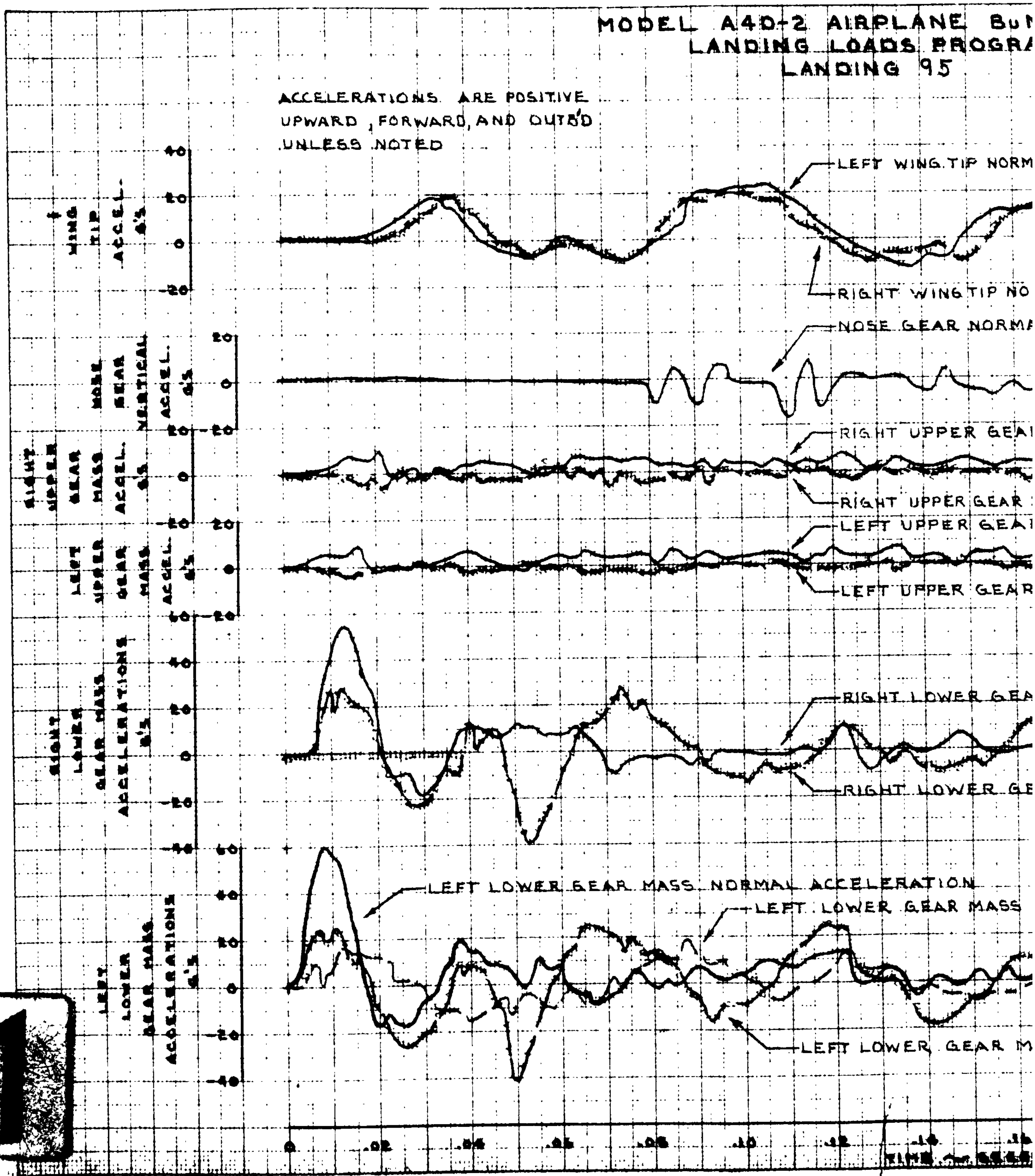
MODEL A4D-2

REPORT NO.: DEV-3616



FORM 25 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



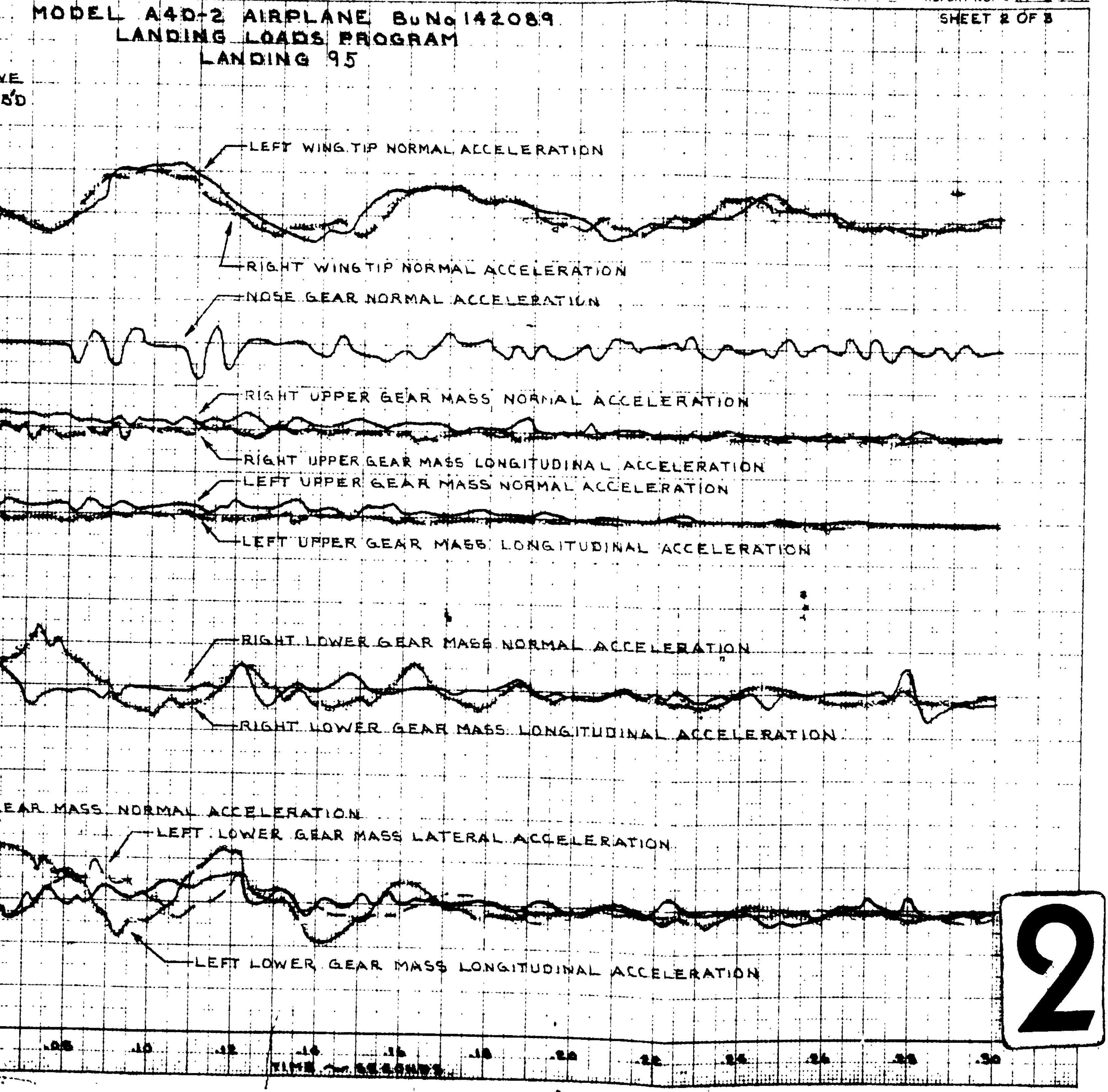
37

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

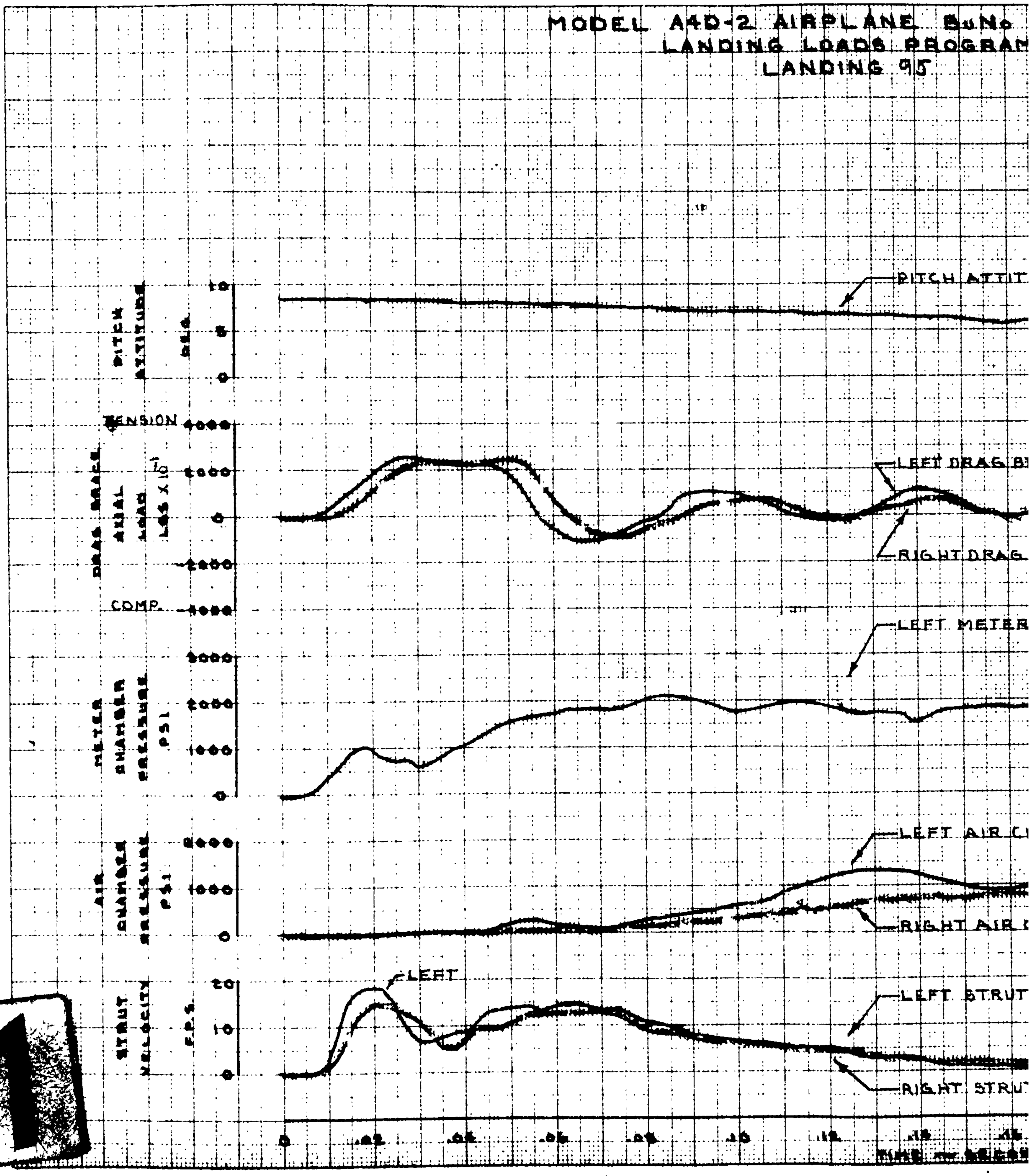
TESTING DIVISION

PAGE 8.4.14
MODEL A4D-2
REPORT NO. DEV-3616



FORM 38 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



38

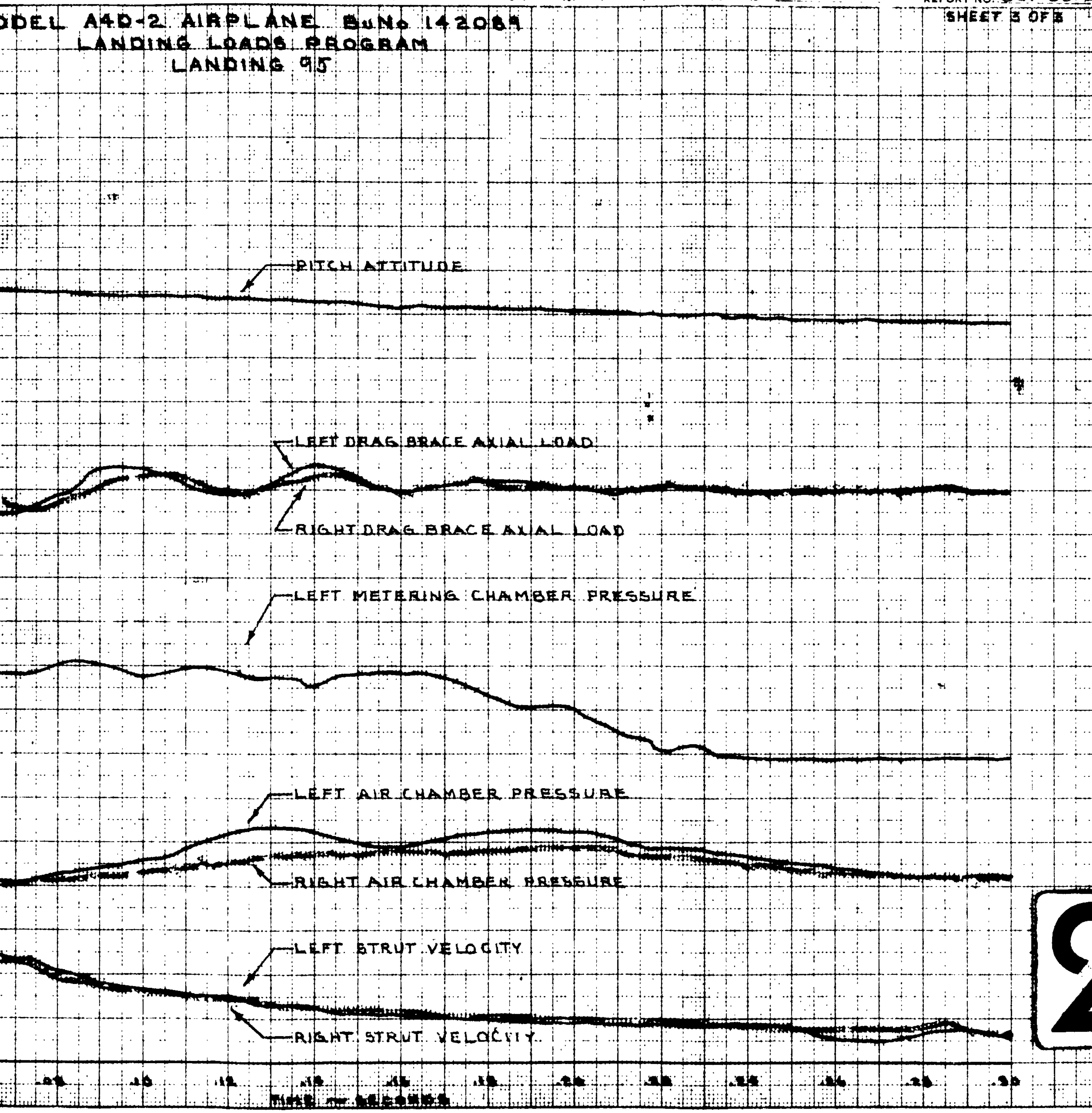
PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.4.15.
MODEL A4D-2
REPORT NO. DEV-3616

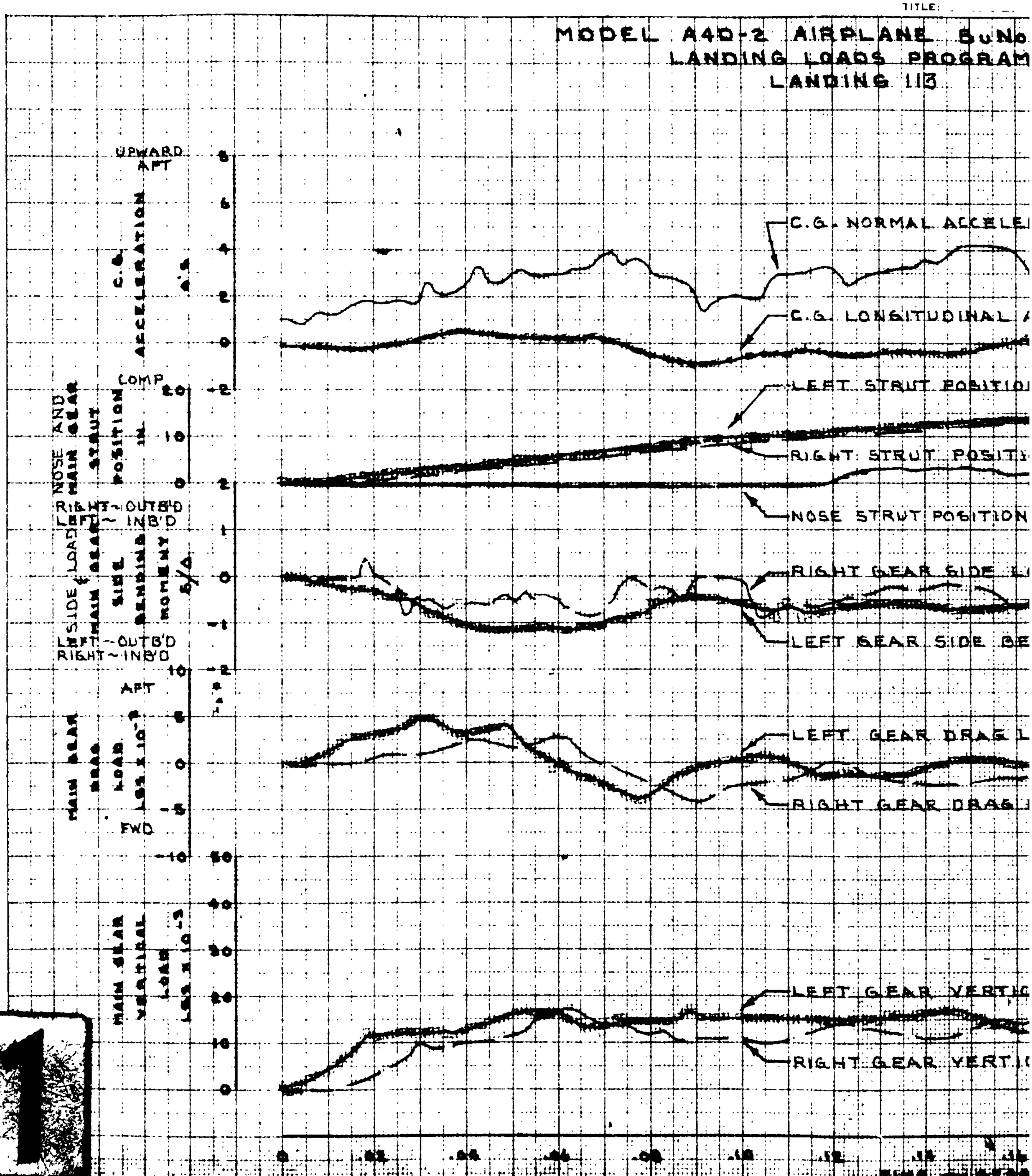
SHEET 3 OF 3



2

FORM 25 BP-1
(REV. 7 64)

PREPARED BY
CHECKED BY
DATE
TITLE:



39

1

PREPARED BY
CHECKED BY
DATE
TITLE:

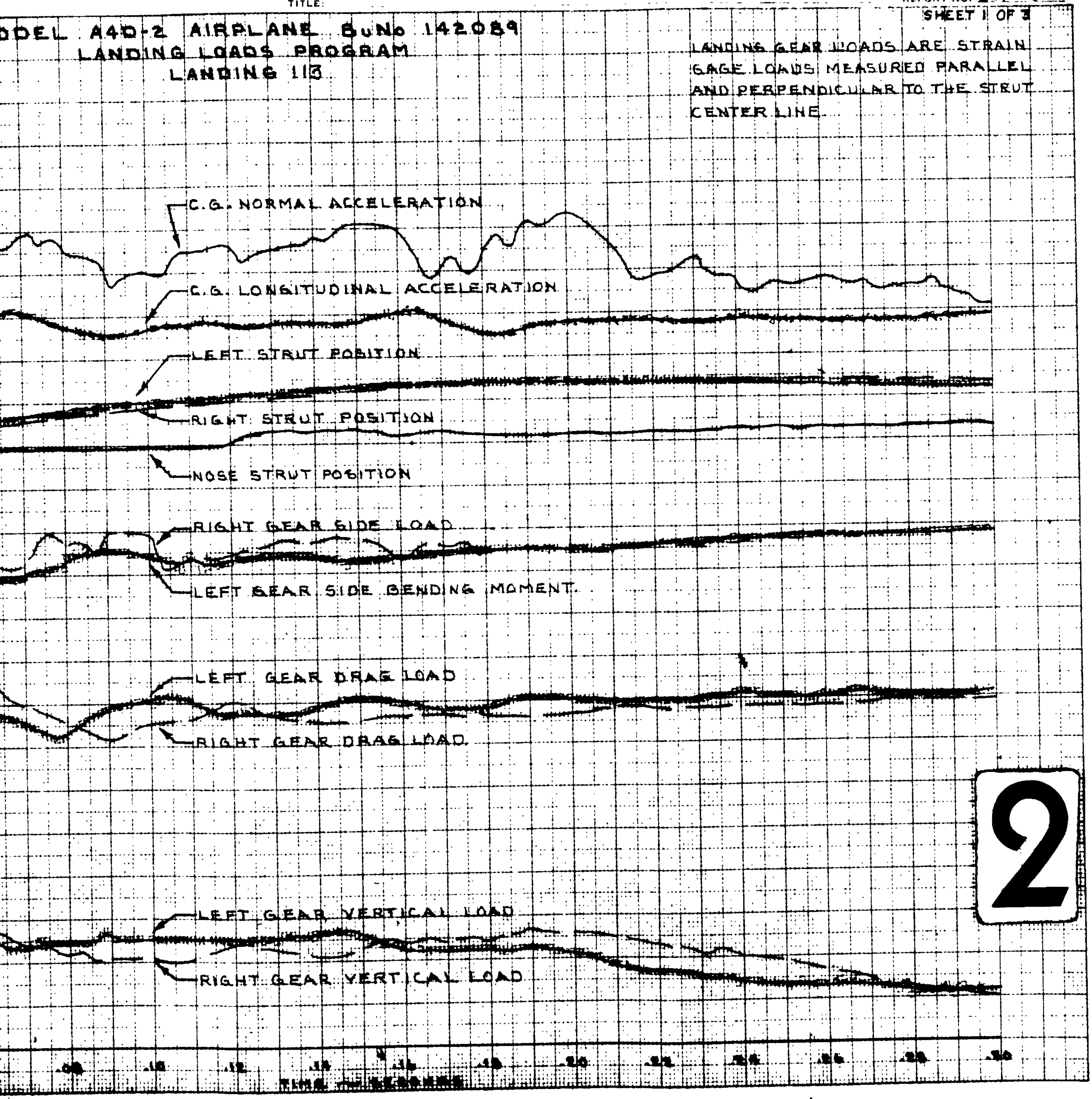
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.4.16

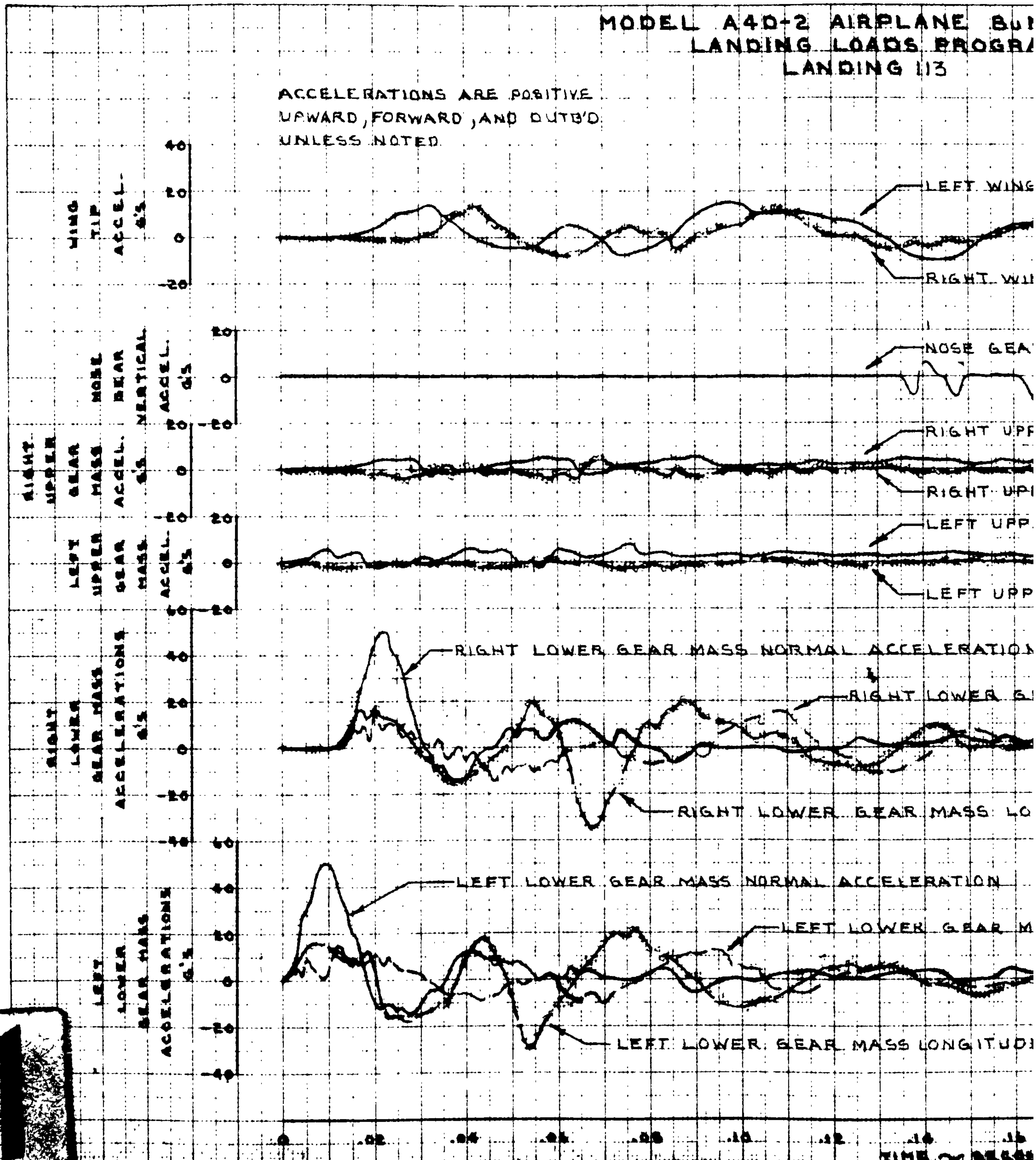
MODEL A4D-2

REPORT NO. DEV-3616



FORM 28 SP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



1

PREPARED BY:
CHECKED BY
DATE
TITLE

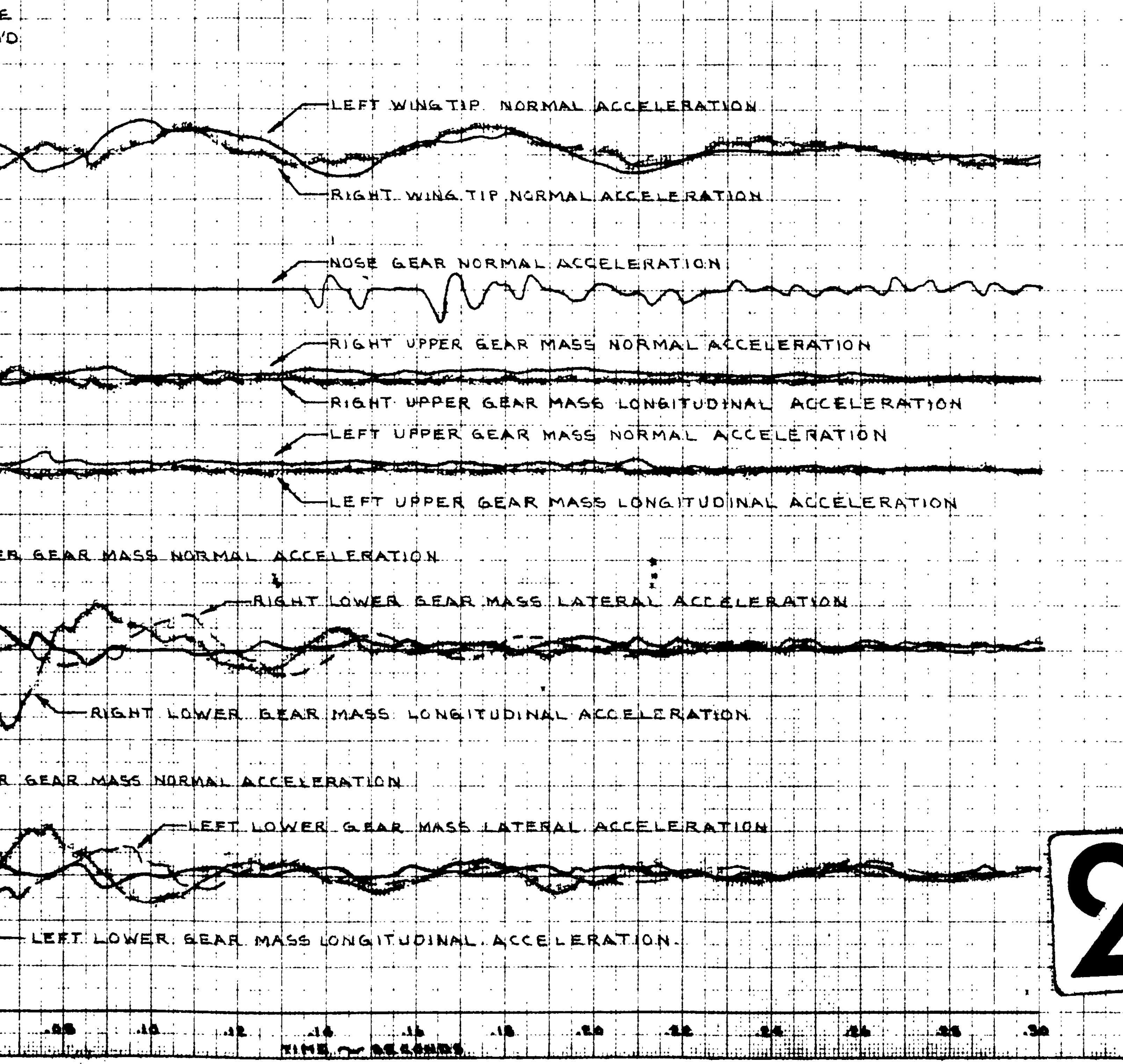
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.417
MODEL A4D-2
REPORT NO. DEV-3616

SHEET 2 OF 3

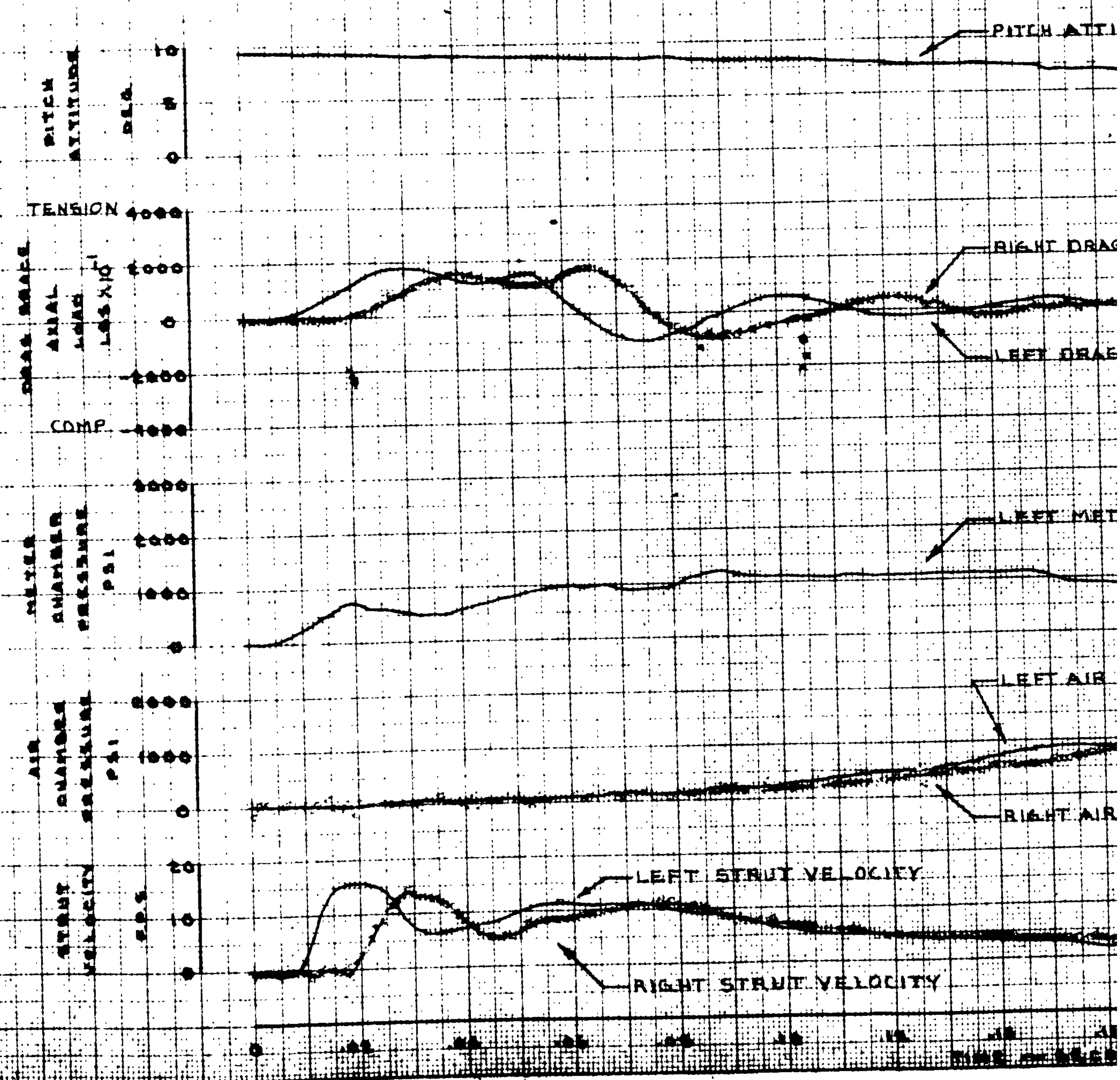
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 113



FORM 25 RP-1 (REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE

MODEL A4D-2 AIRPLANE BuNo
LANDING LOADS PROGRAM
LANDING 113



K+E ALBANENE

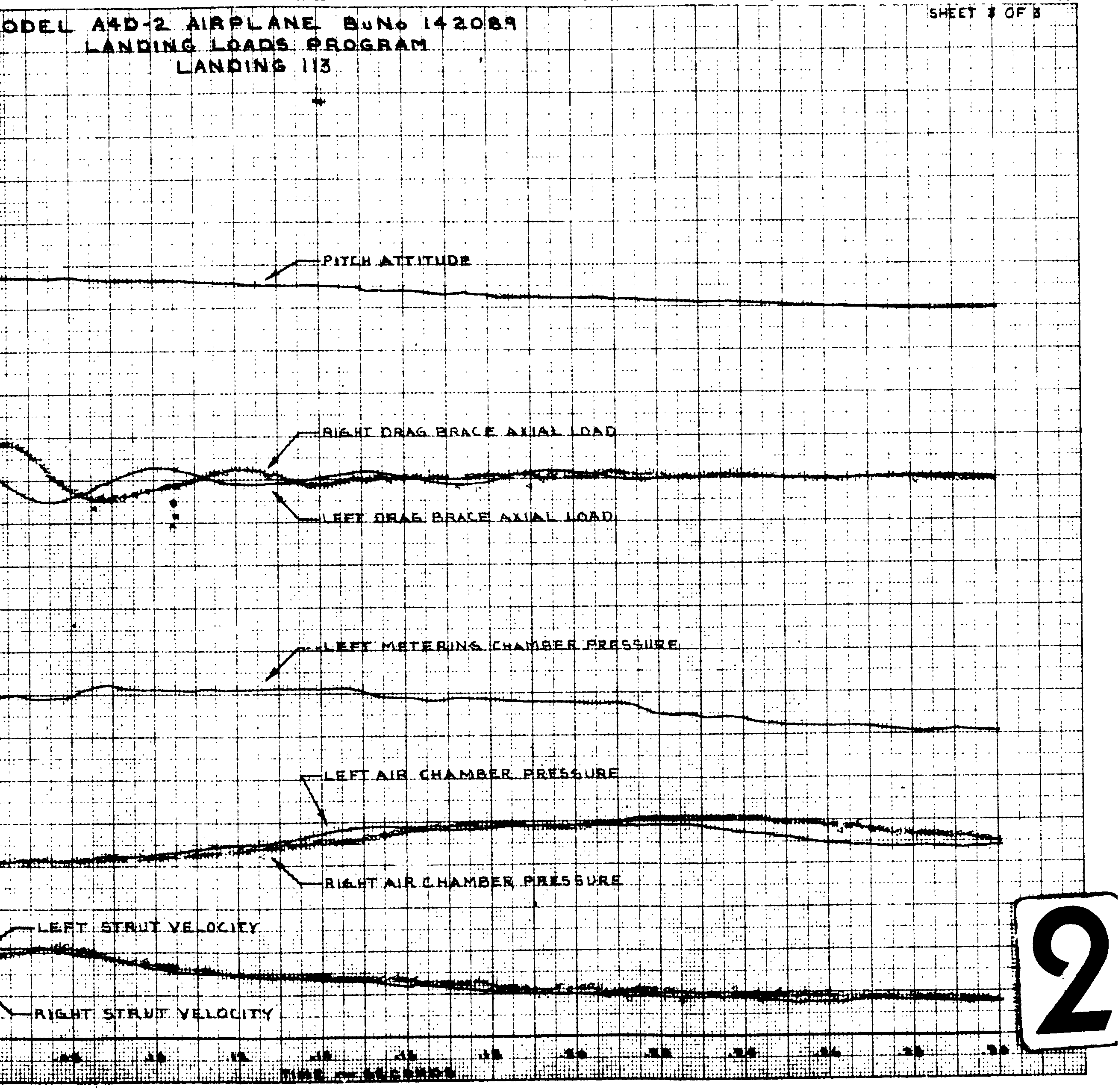
41

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

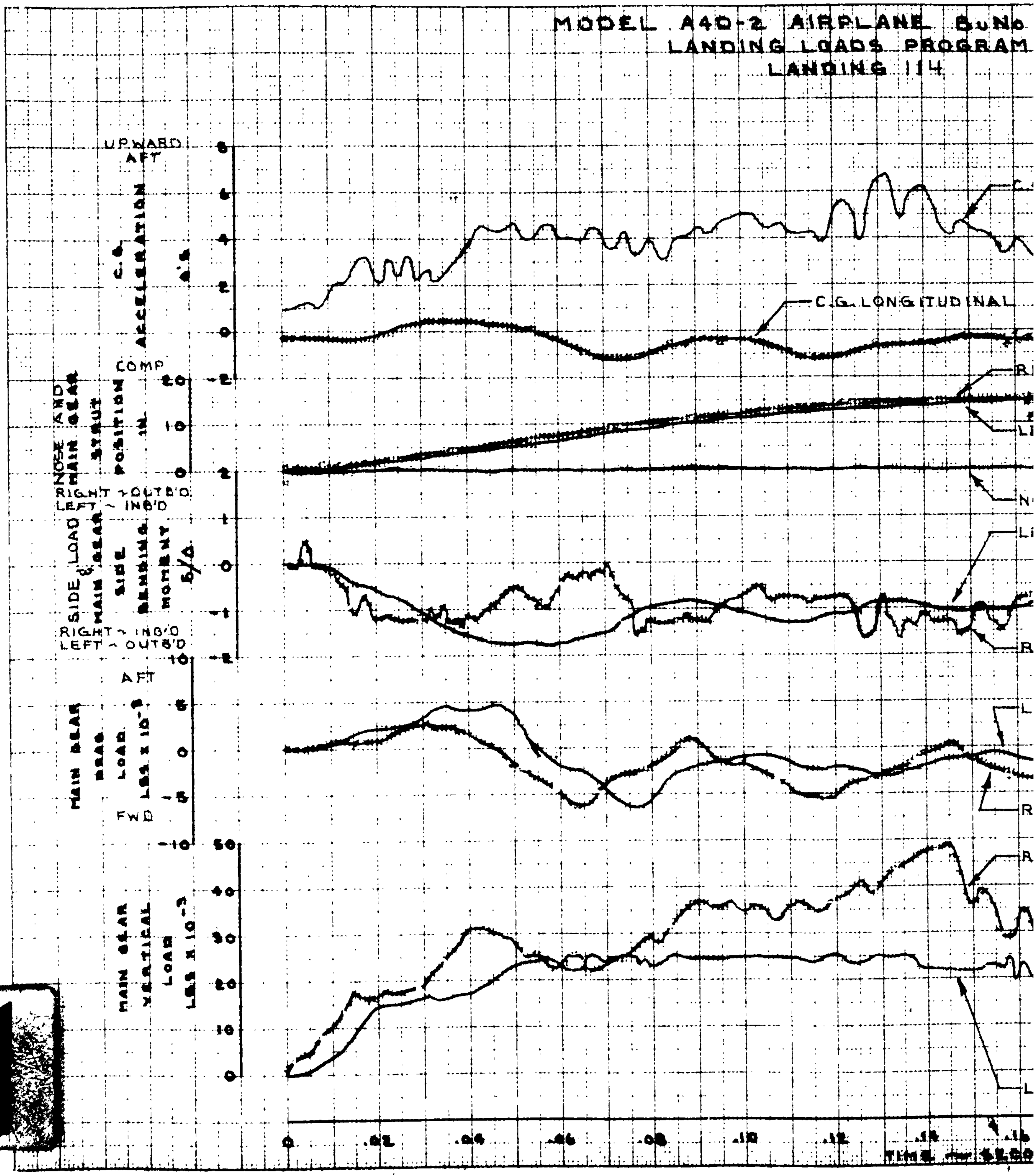
TESTING DIVISION

PAGE: 8.4.18
MODEL A4D-2
REPORT NO. DEV-3616
SHEET 3 OF 3



FORM 25 DP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



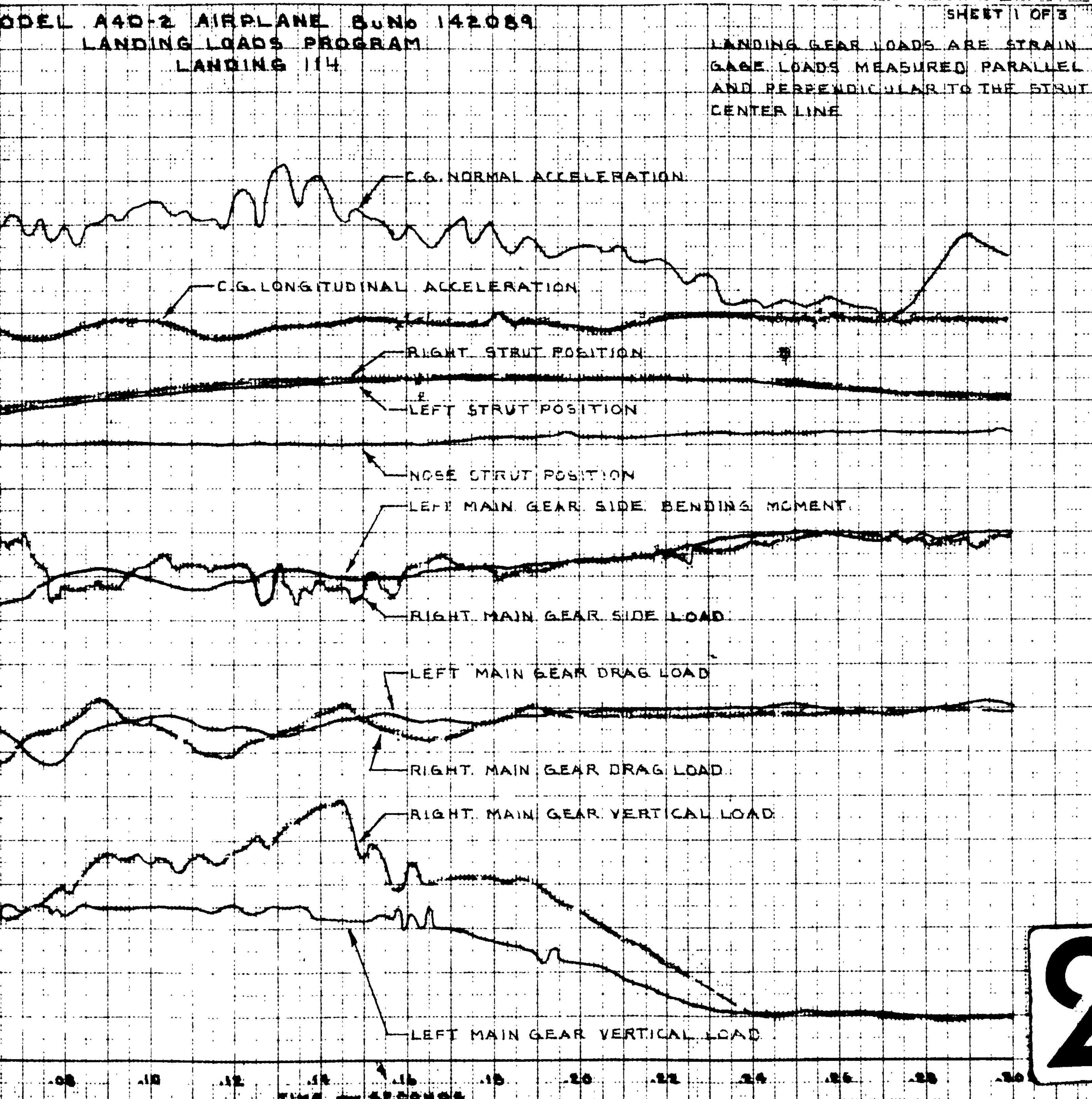
42

PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

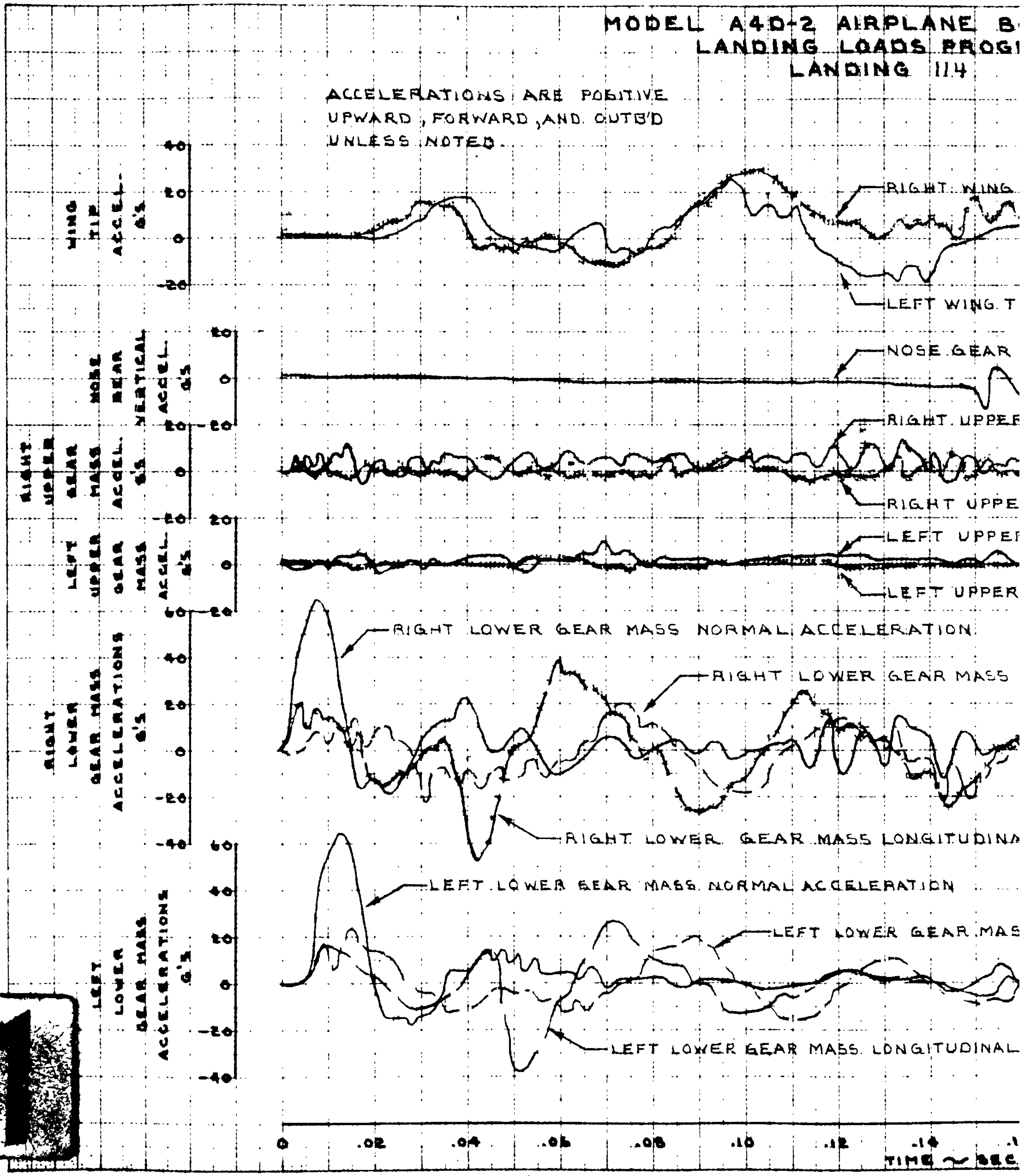
PAGE: 8.4.19
MODEL: A4D-2
REPORT NO. DEV-3616



2

FORM 26 BP-1
(REV. 7-54)

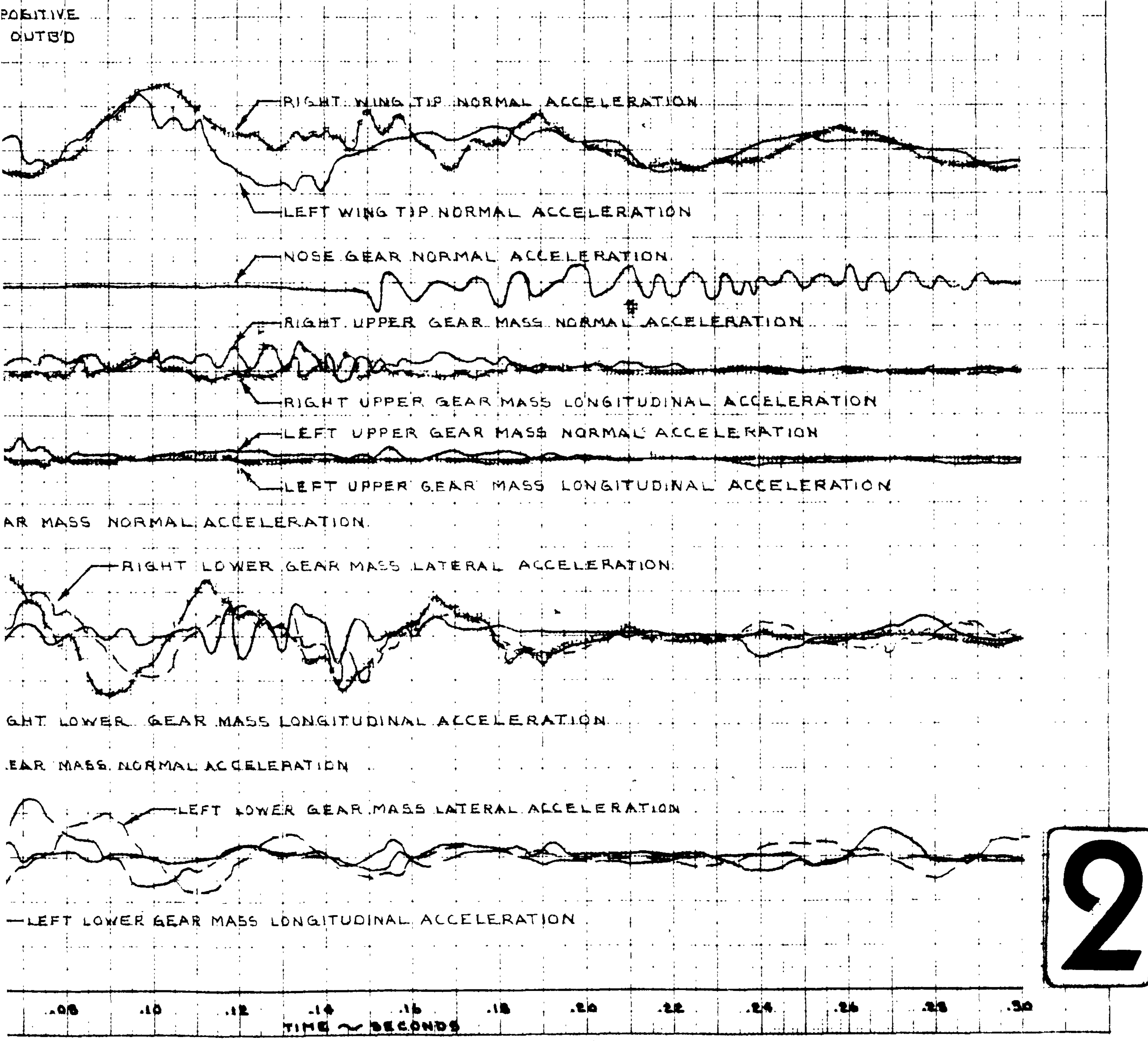
PREPARED BY
CHECKED BY
DATE
TITLE



43

1

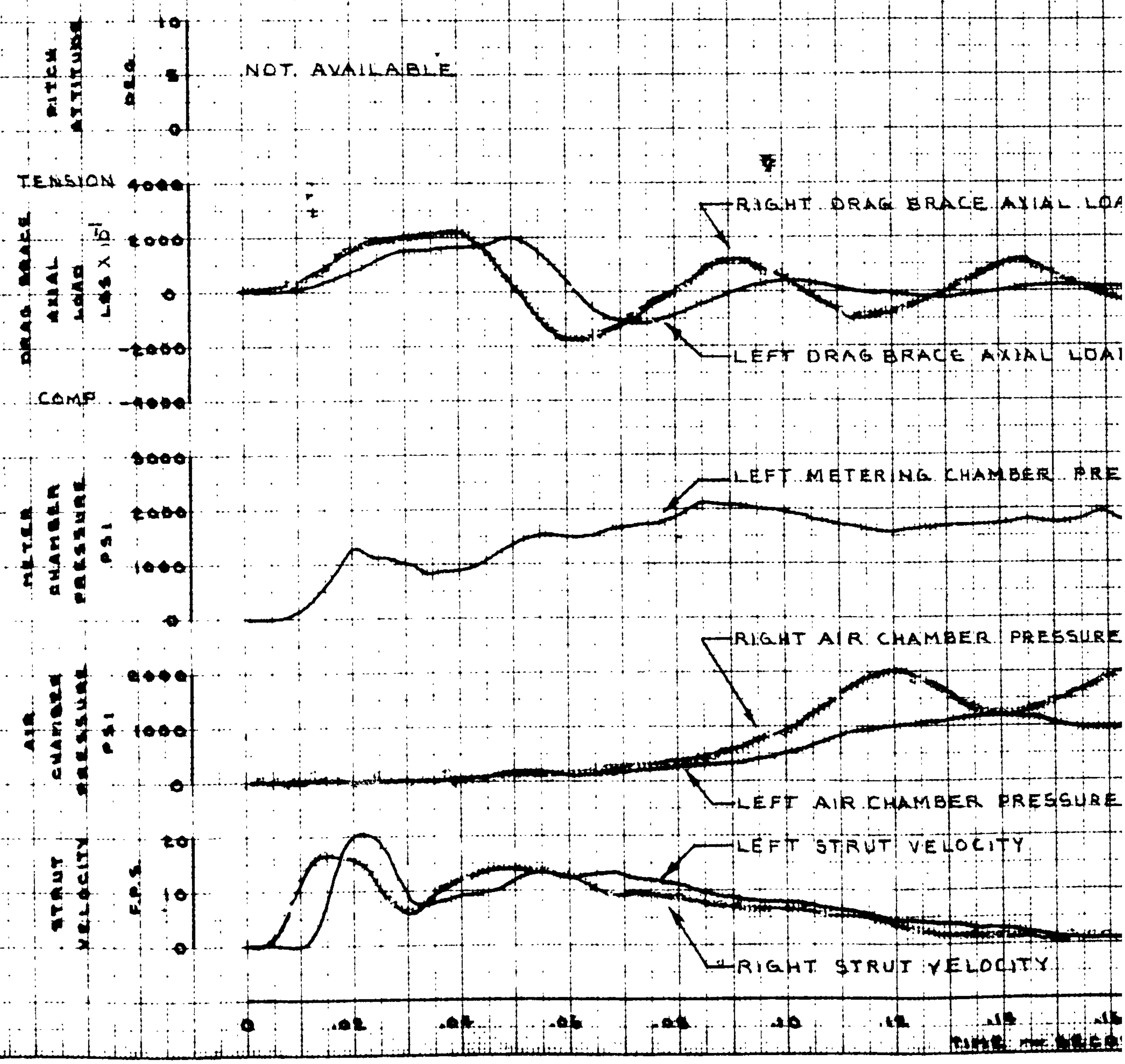
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 114



FORM 25 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE

MODEL A4D-2 AIRPLANE BuNo
LANDING LOADS PROGRAM
LANDING 114



K-E

44

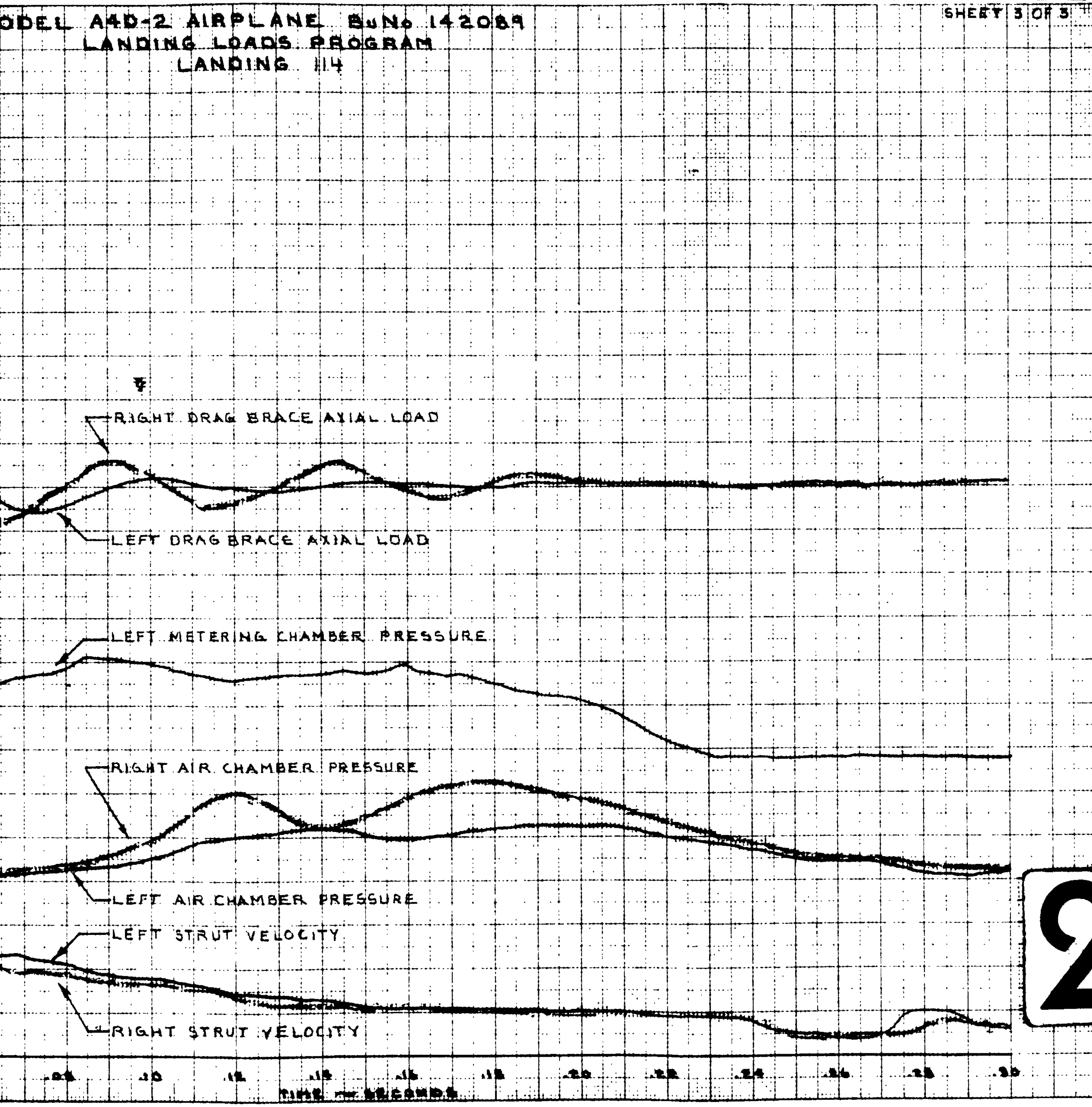
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

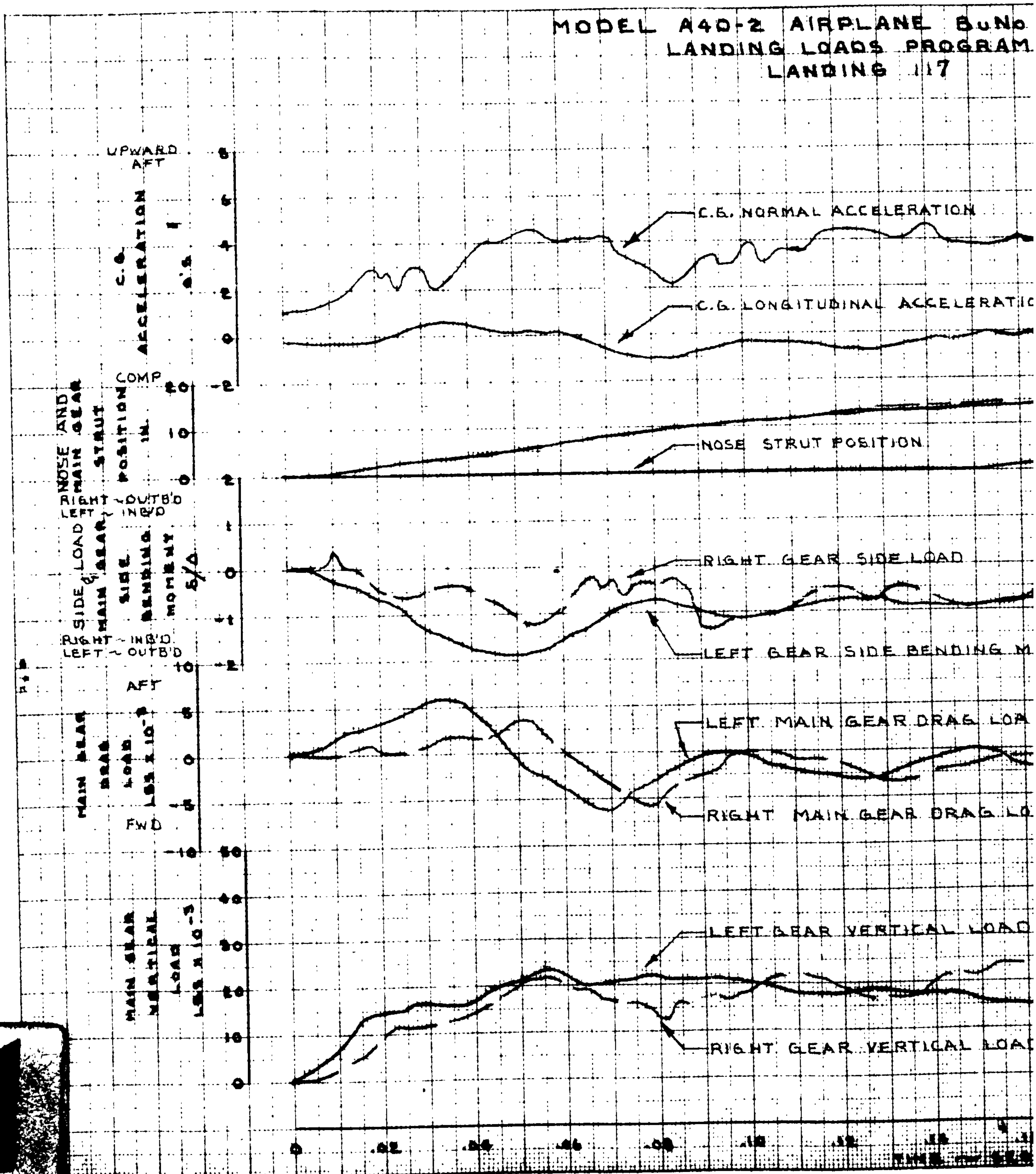
TESTING DIVISION

MODEL A4D-2
REPORT NO. DEV-3616



FORM 25 ...
(REV. 7-51)

PREPARED BY
CHECKED BY
DATE
TITLE



K-E

1

PREPARED BY
CHECKED BY
DATE
TITLE

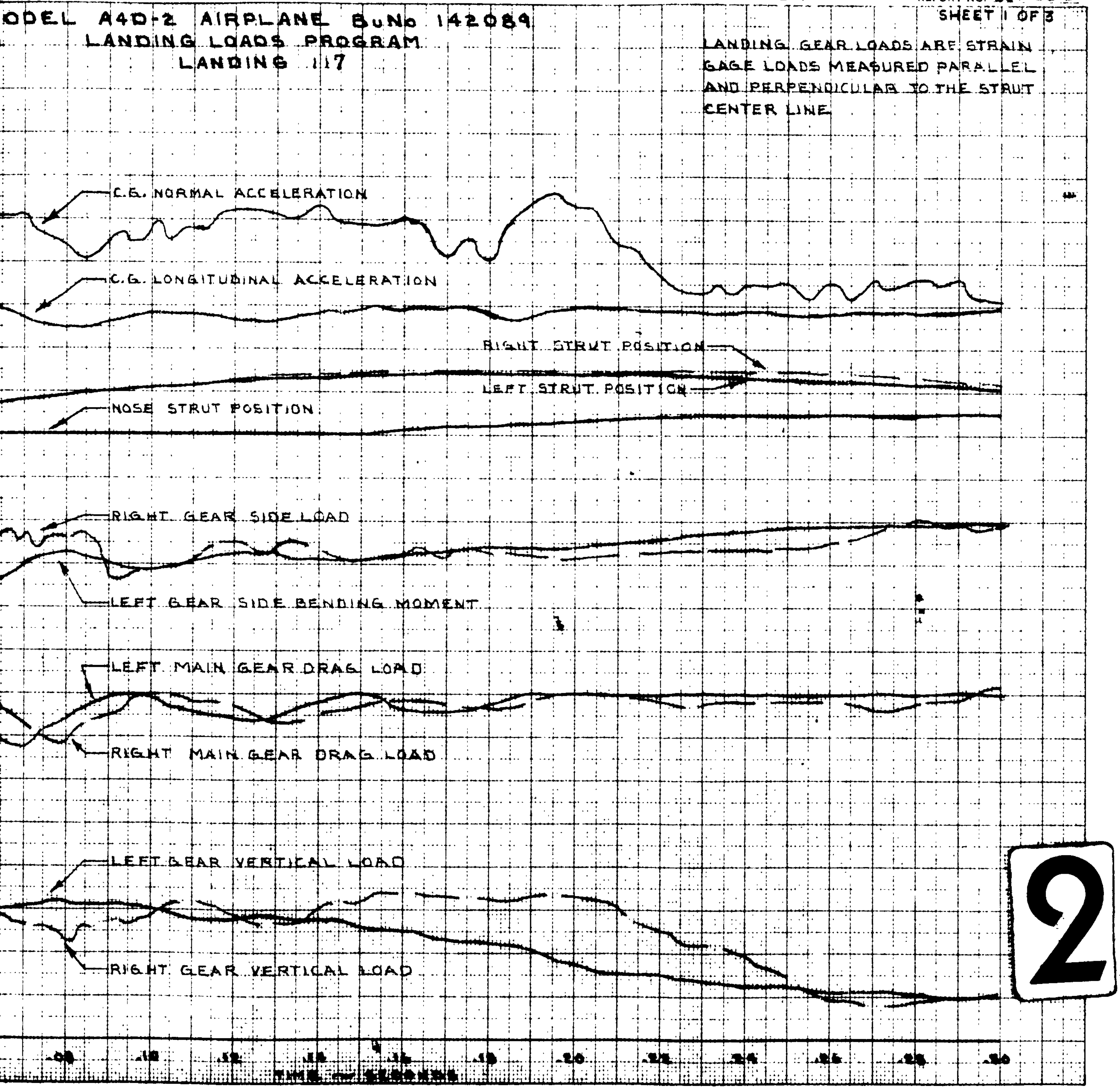
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE 8.4.22

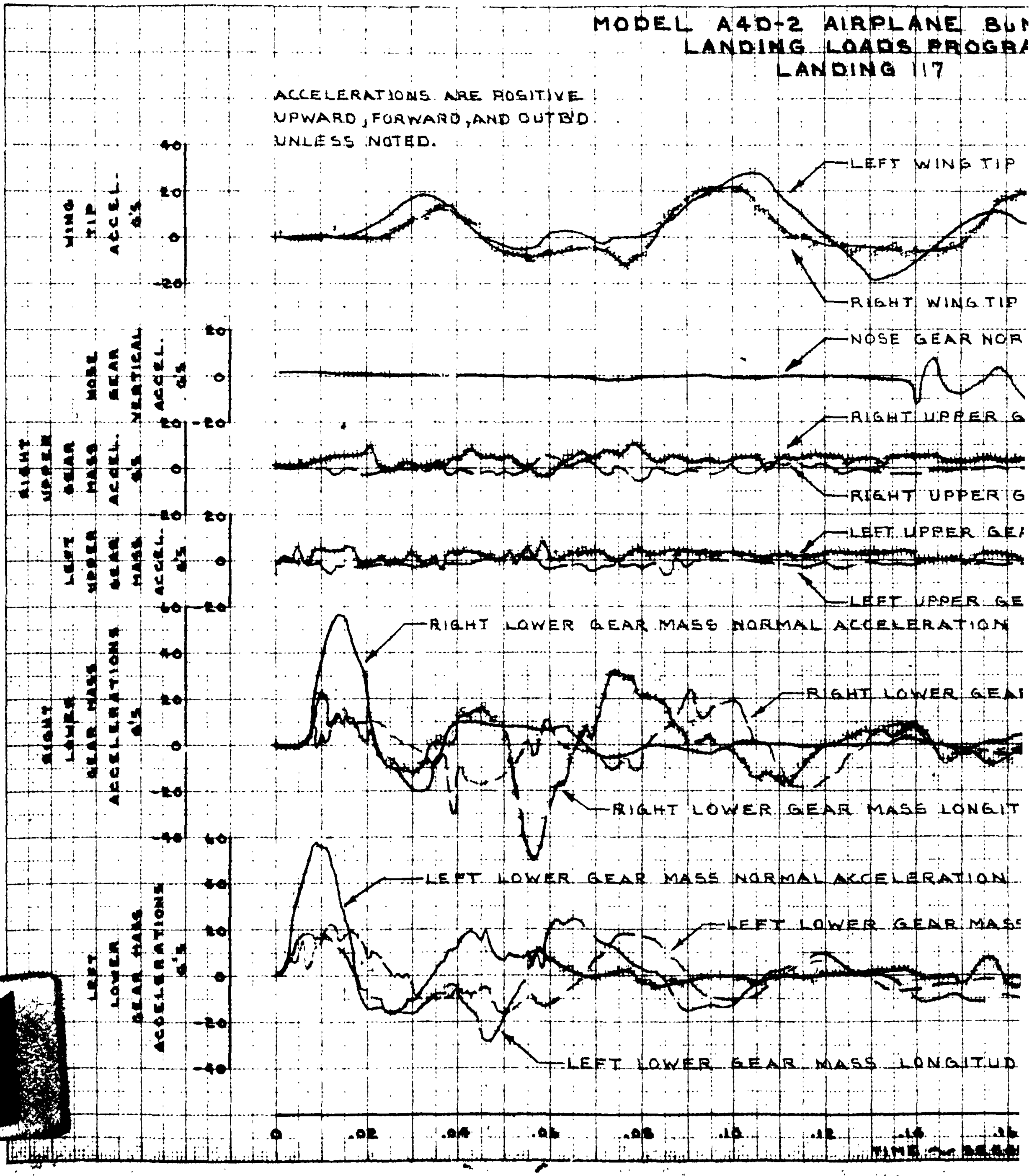
MODEL A4D-2

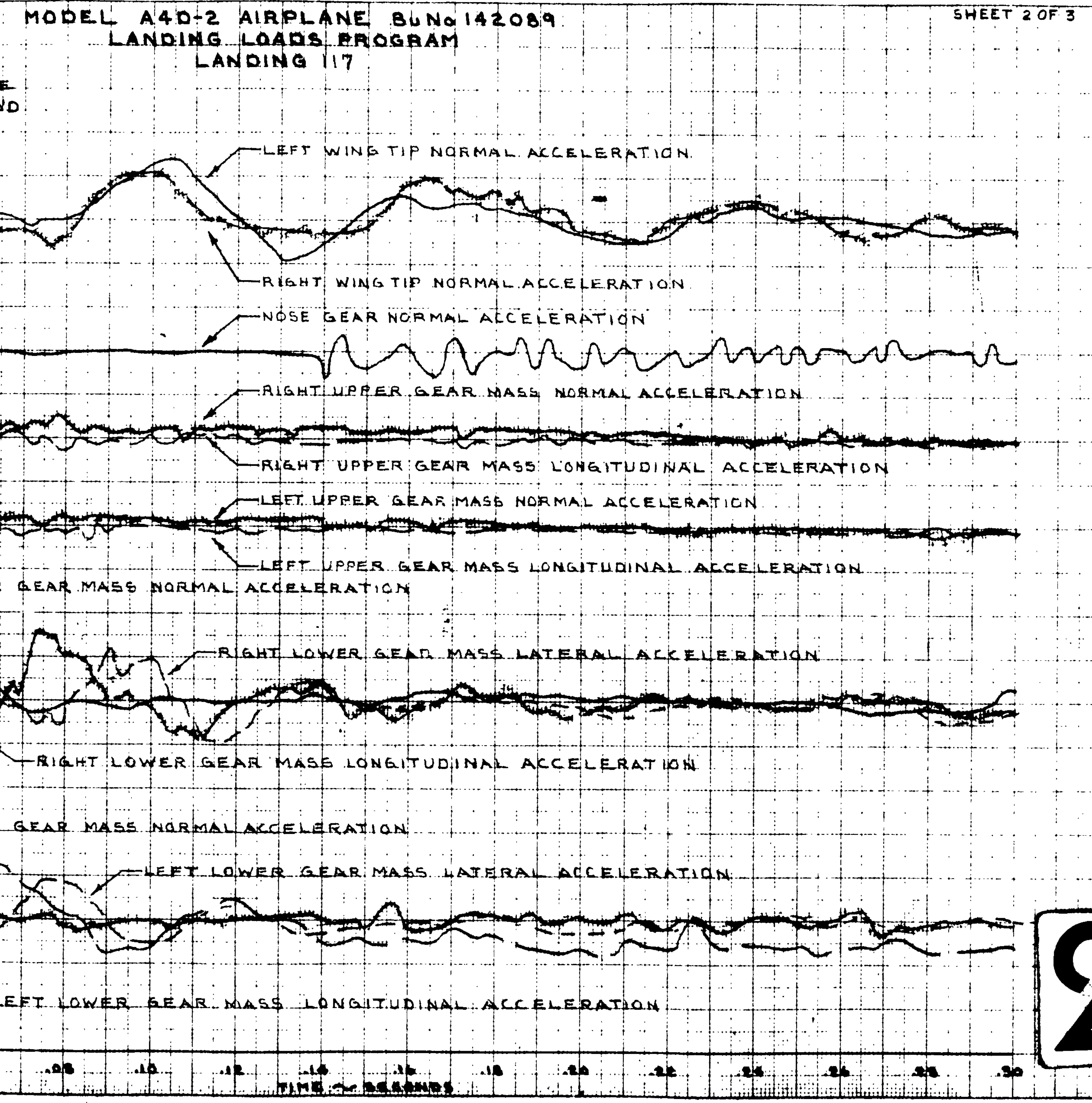
REPORT NO. DEV-3616



FORM 28 UP 1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE

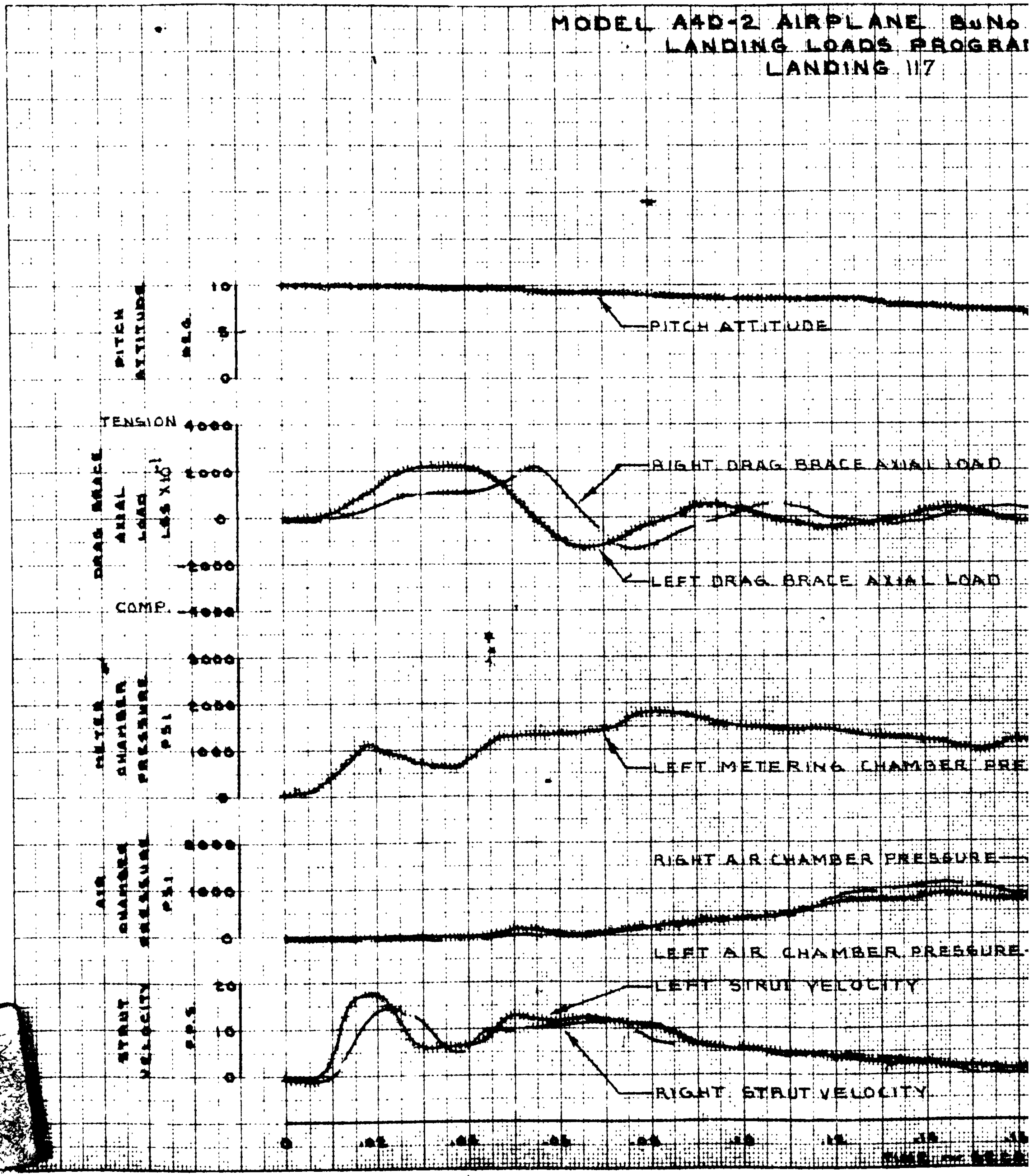


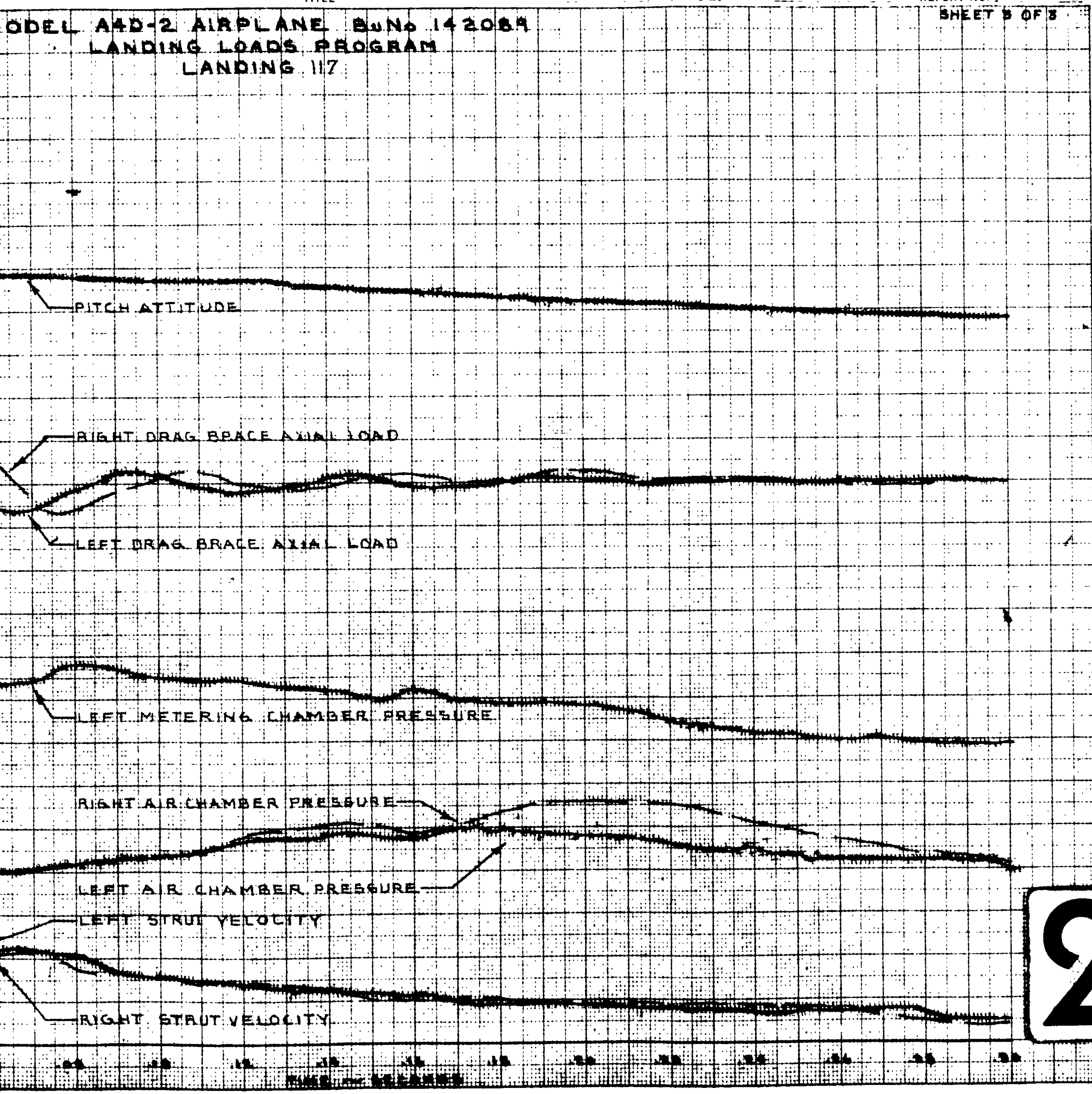

MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 117
LEFT WING TIP NORMAL ACCELERATION
RIGHT WING TIP NORMAL ACCELERATION
NOSE GEAR NORMAL ACCELERATION
RIGHT UPPER GEAR MASS NORMAL ACCELERATION
RIGHT UPPER GEAR MASS LONGITUDINAL ACCELERATION
LEFT UPPER GEAR MASS NORMAL ACCELERATION
LEFT UPPER GEAR MASS LONGITUDINAL ACCELERATION
GEAR MASS NORMAL ACCELERATION
RIGHT LOWER GEAR MASS LATERAL ACCELERATION
RIGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION
GEAR MASS NORMAL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
LEFT LOWER GEAR MASS LONGITUDINAL ACCELERATION
.10
.12
.20
.22
.30
TIME ~ SECONDS

2

FORM 25 BP 1
(REV 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE

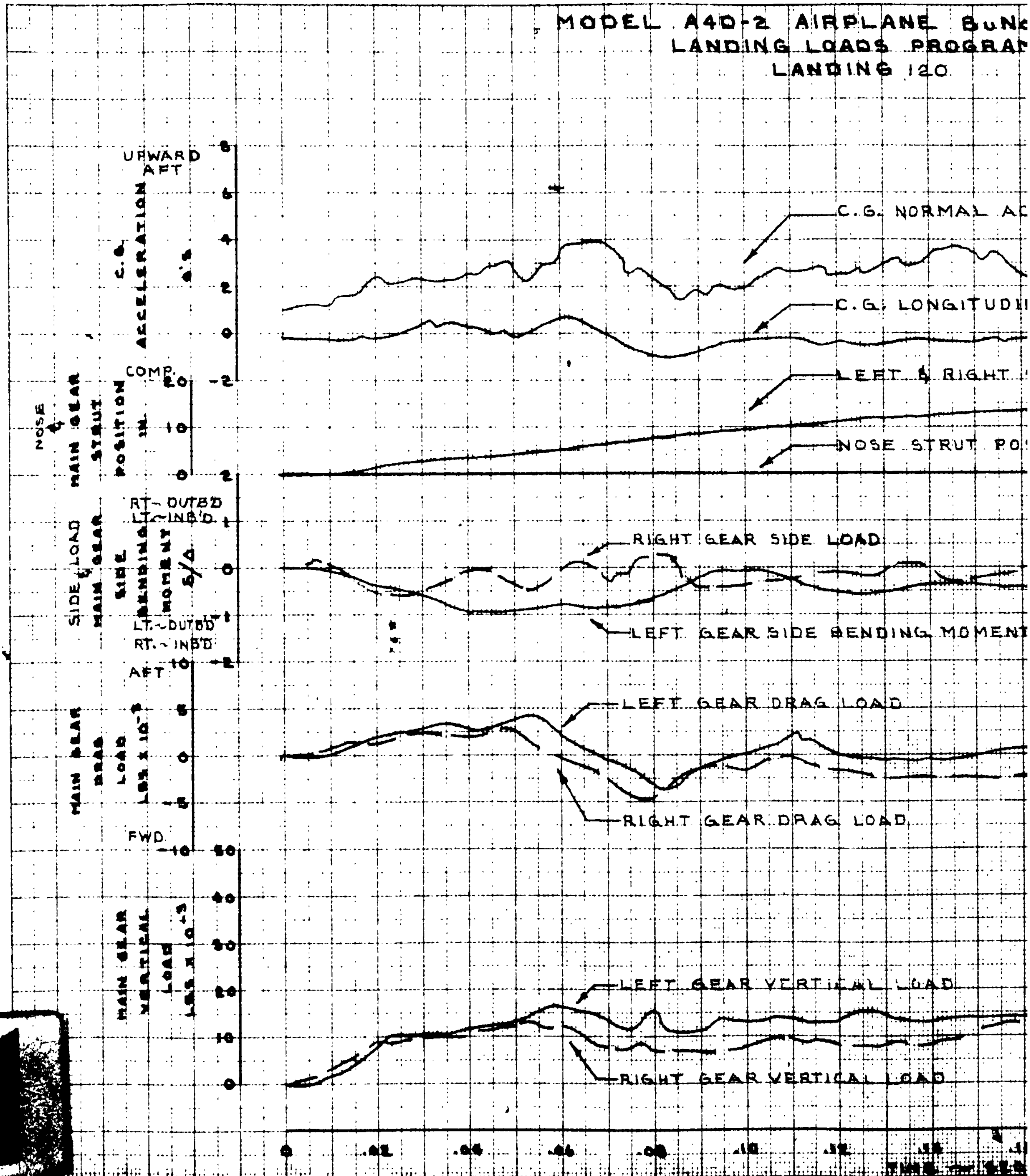



ODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 117
PITCH ATTITUDE
RIGHT DRAG BRACE AXIAL LOAD
LEFT DRAG BRACE AXIAL LOAD
LEFT METERING CHAMBER PRESSURE
RIGHT AIR CHAMBER PRESSURE
LEFT AIR CHAMBER PRESSURE
LEFT STRUT VELOCITY
RIGHT STRUT VELOCITY

2

FORM 25 UP-1 (REV. 7-64)

PREPARED BY
CHECKED BY
DATE
TITLE



K-E

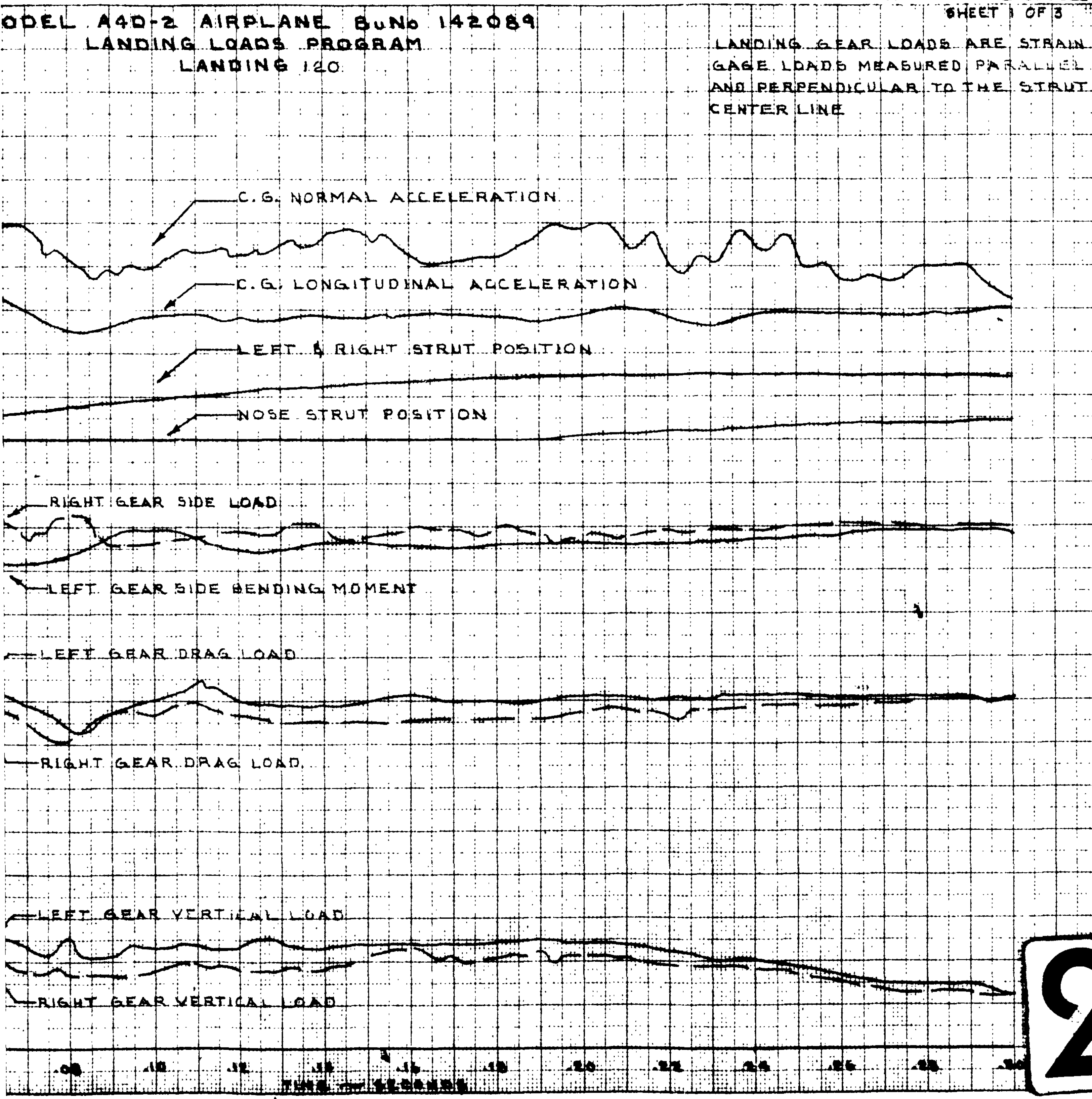
48

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

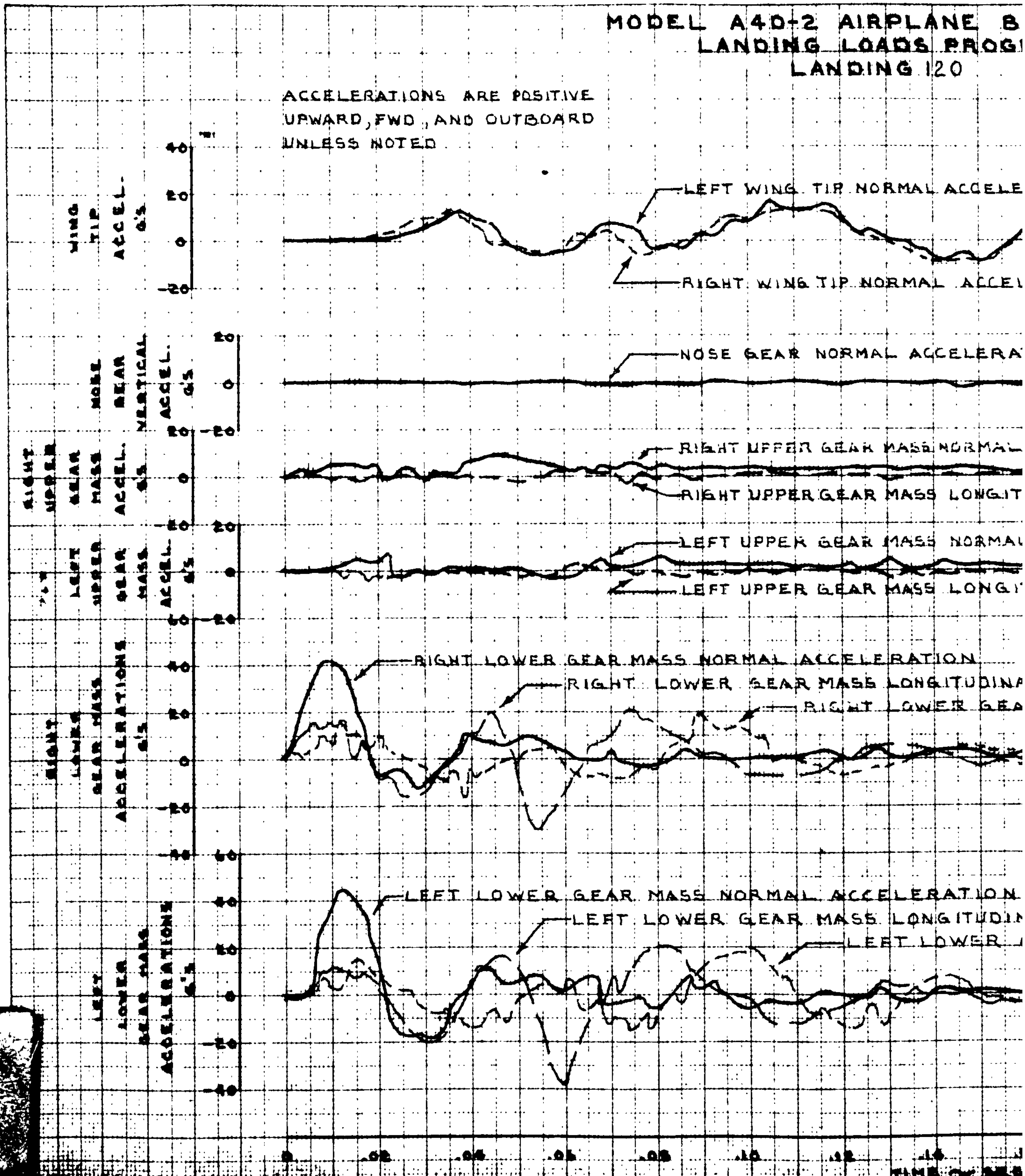
TESTING DIVISION

PAGE 8.4.25
MODEL A4D-2
REPORT NO. DEV-3616



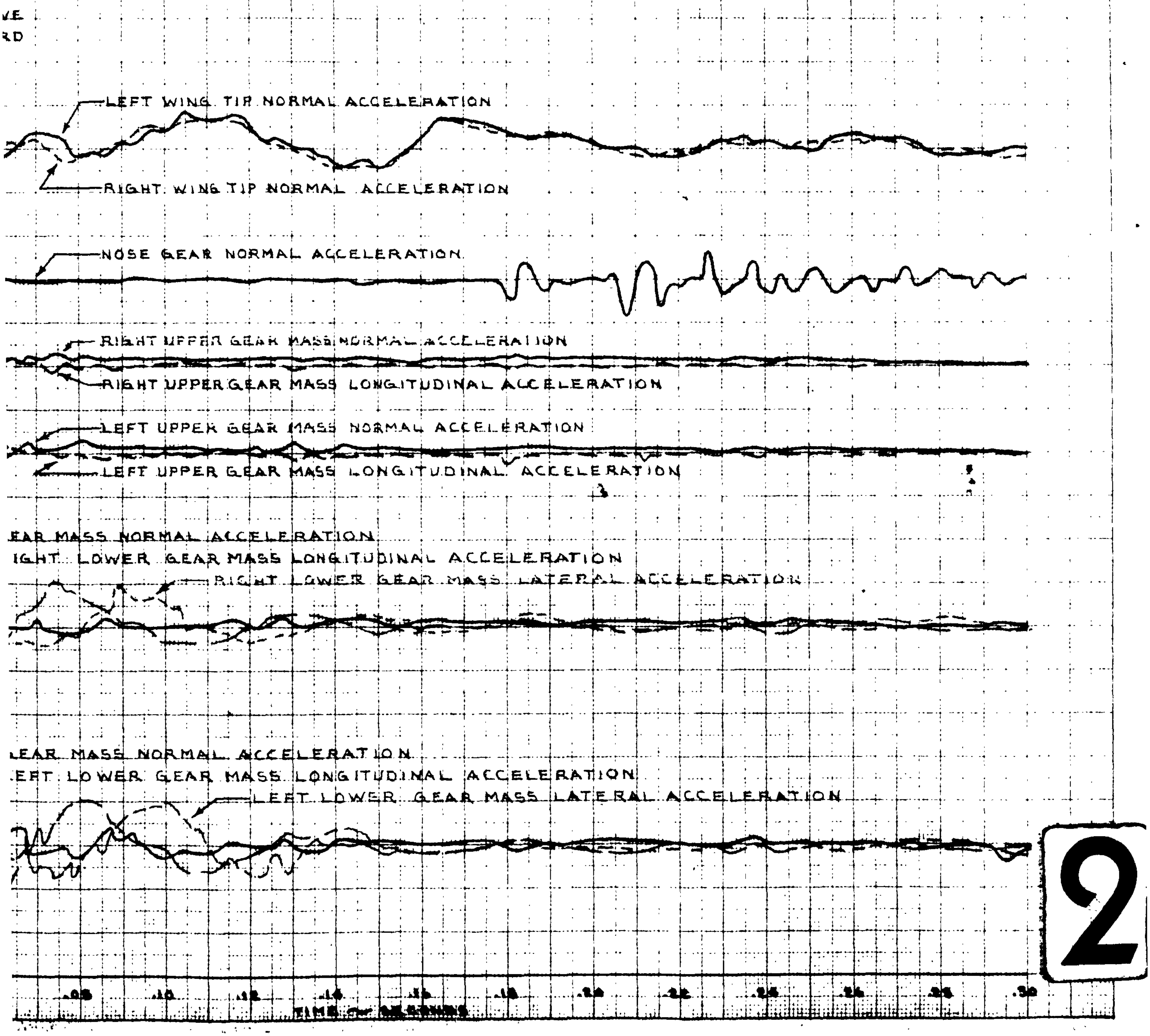
FORM 25 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



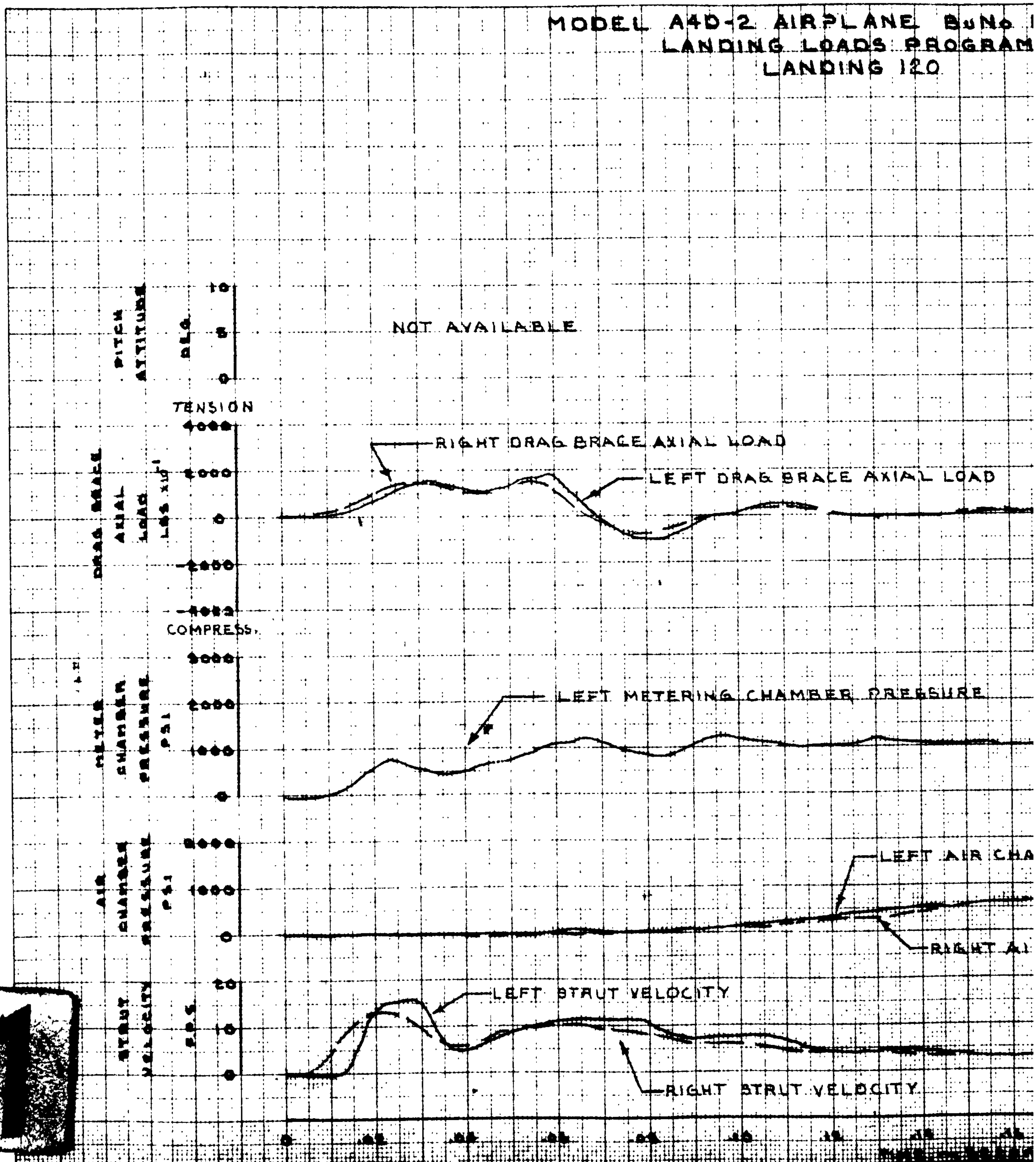
49

MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 120



FORM 25 BP-1
(REV. 7 54)

PREPARED BY:
CHECKED BY
DATE
TITLE



K+E ALBANENE 196L TRACING PAPER

50

1

PREPARED BY:
CHECKED BY
DATE
TITLE

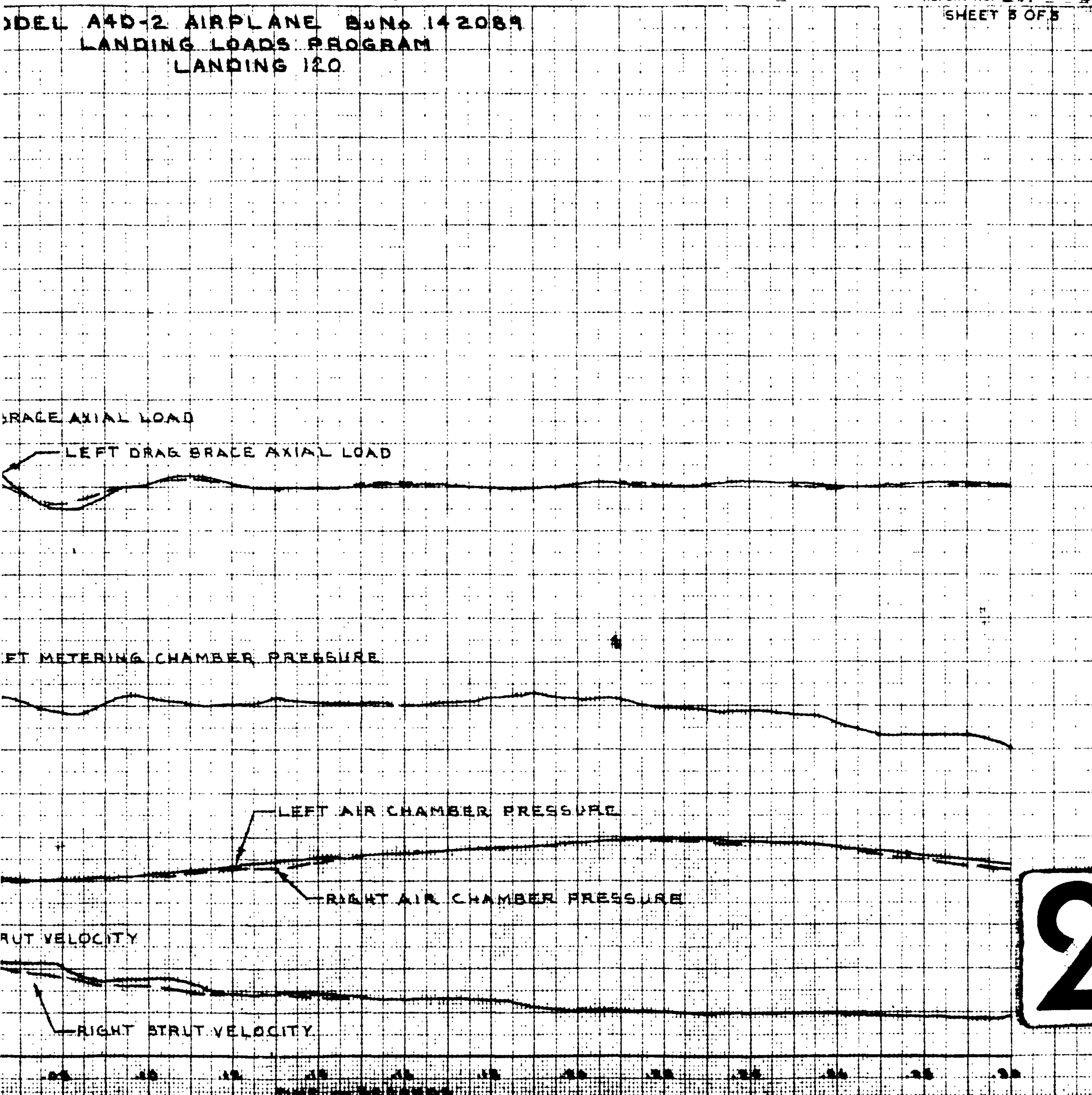
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE 8.4.27

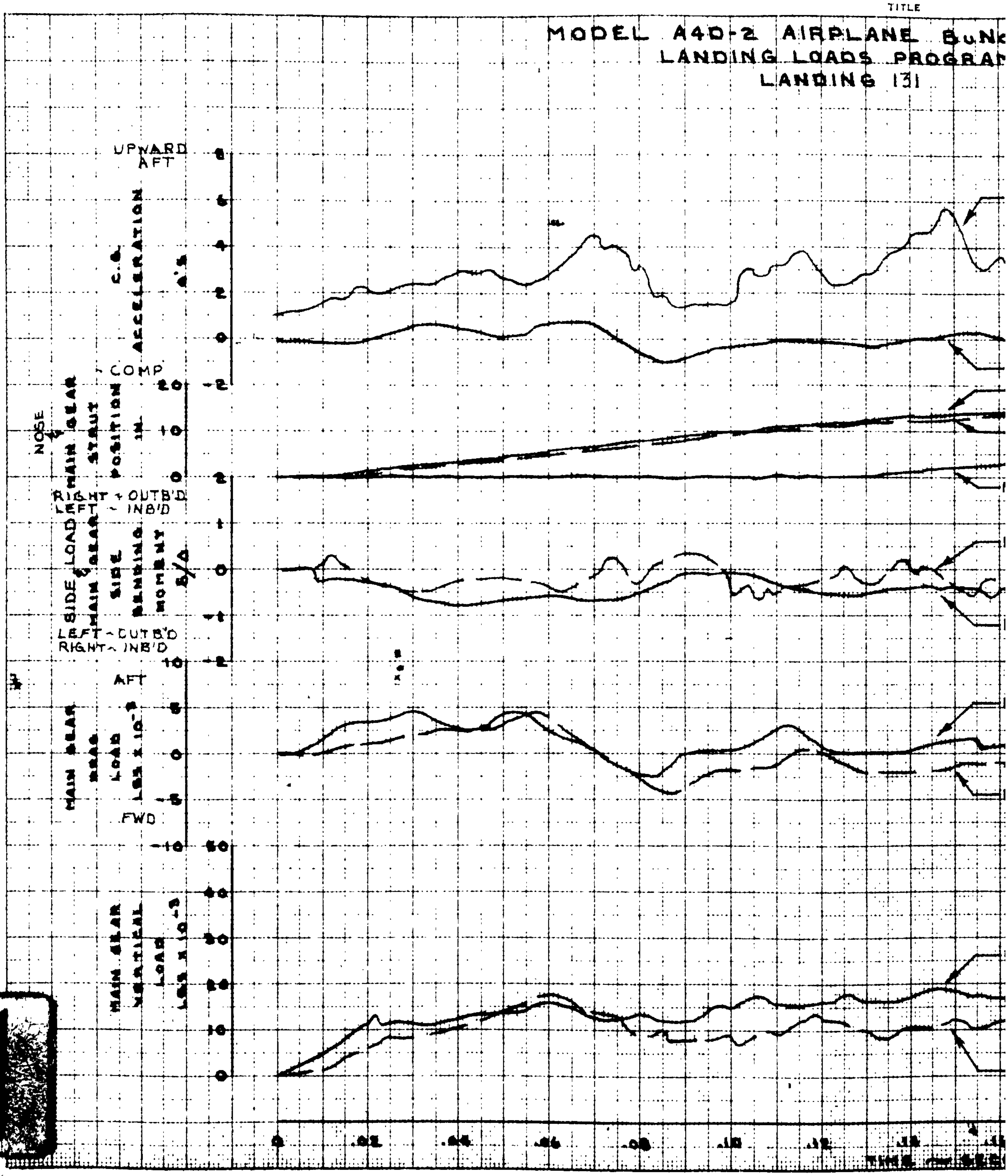
MODEL A4D-2

REPORT NO. DEV-3616



FORM 25 DP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



K·E ALBANENE 195L ® TRACING PAPER

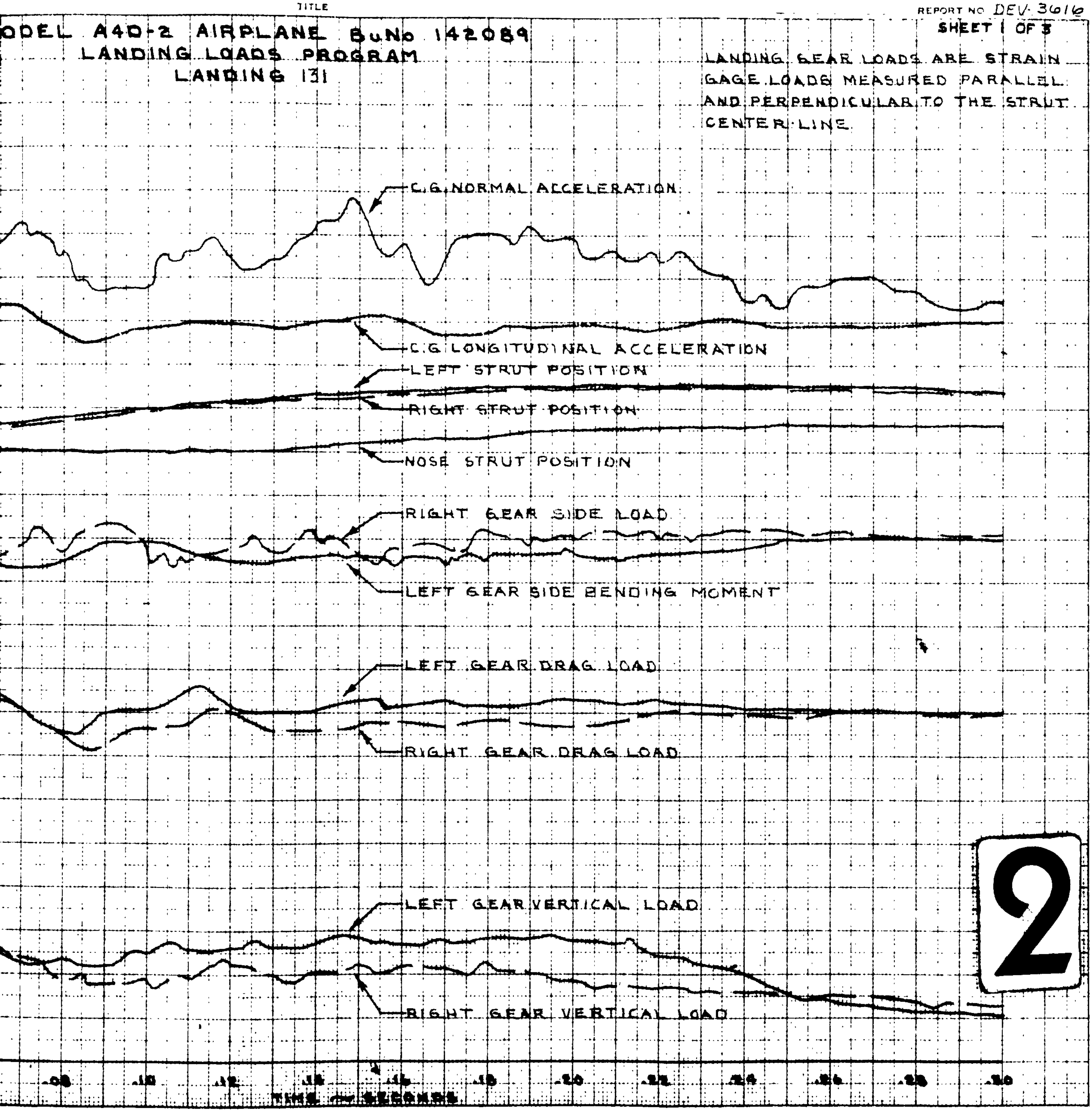
15

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

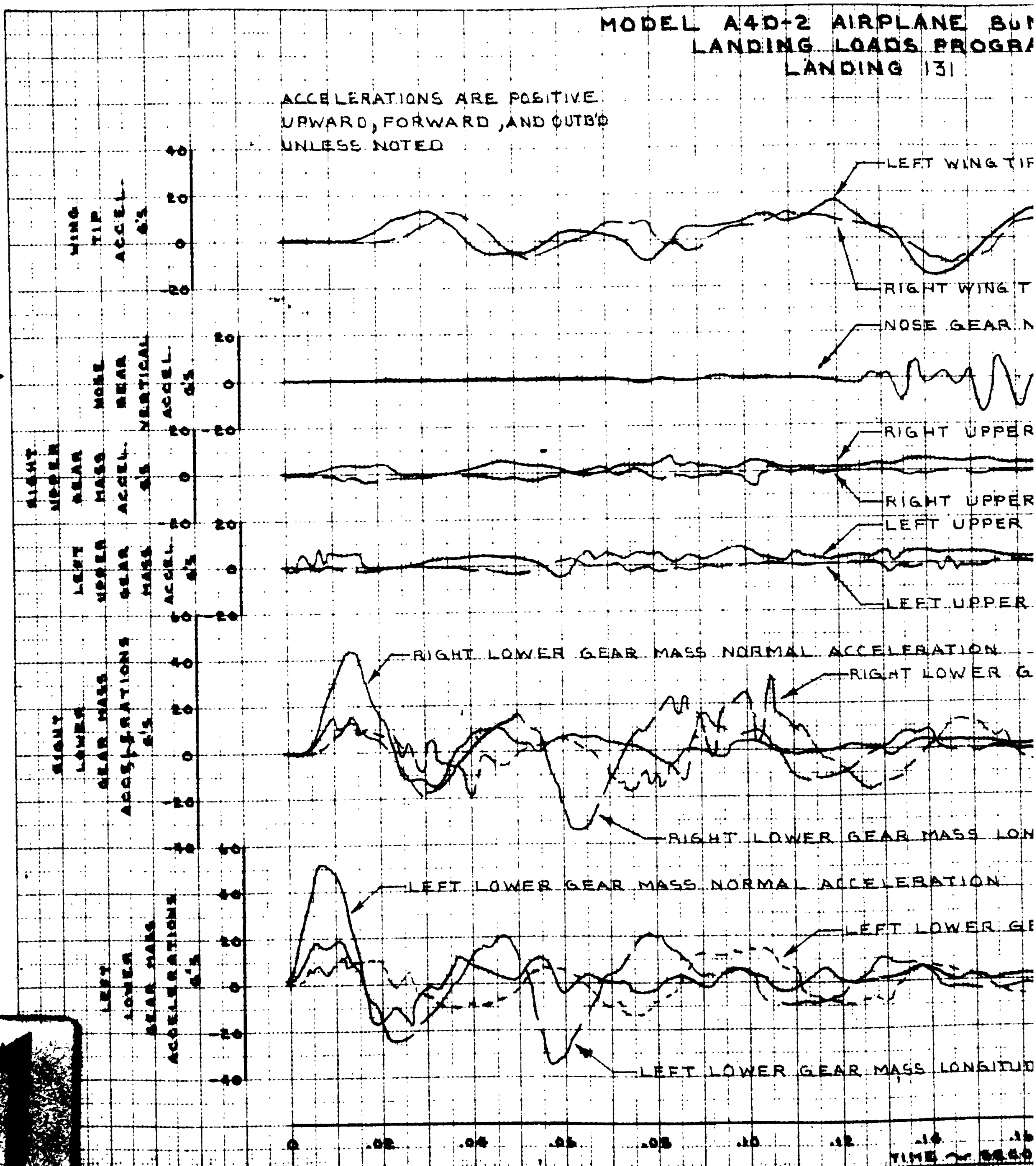
TESTING DIVISION

PAGE 8.4.28
MODEL A4D-2
REPORT NO DEV-3616



FORM 38 RP-1
(REV. 7-54)

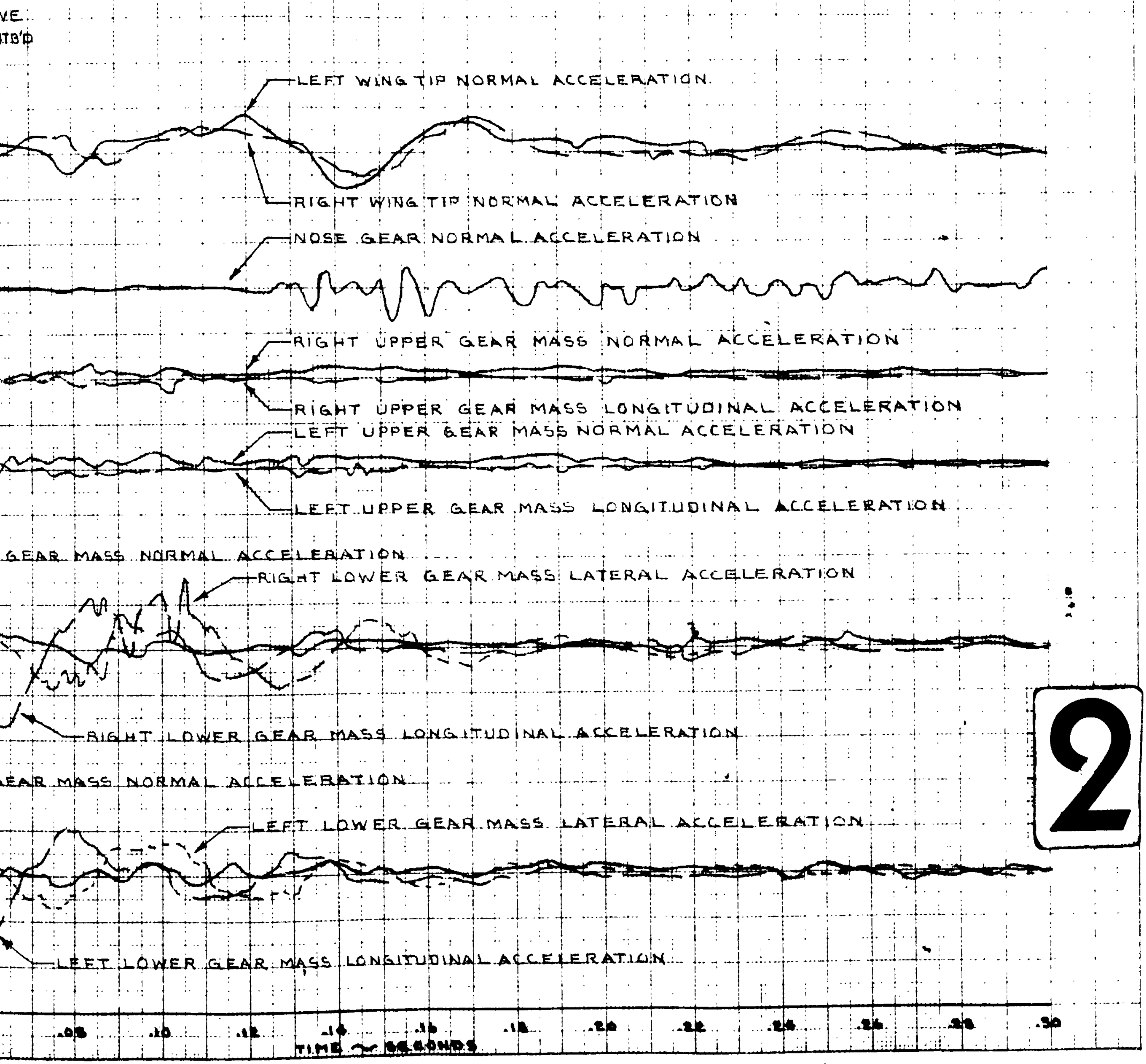
PREPARED BY:
CHECKED BY
DATE
TITLE



K-E ALBANENE

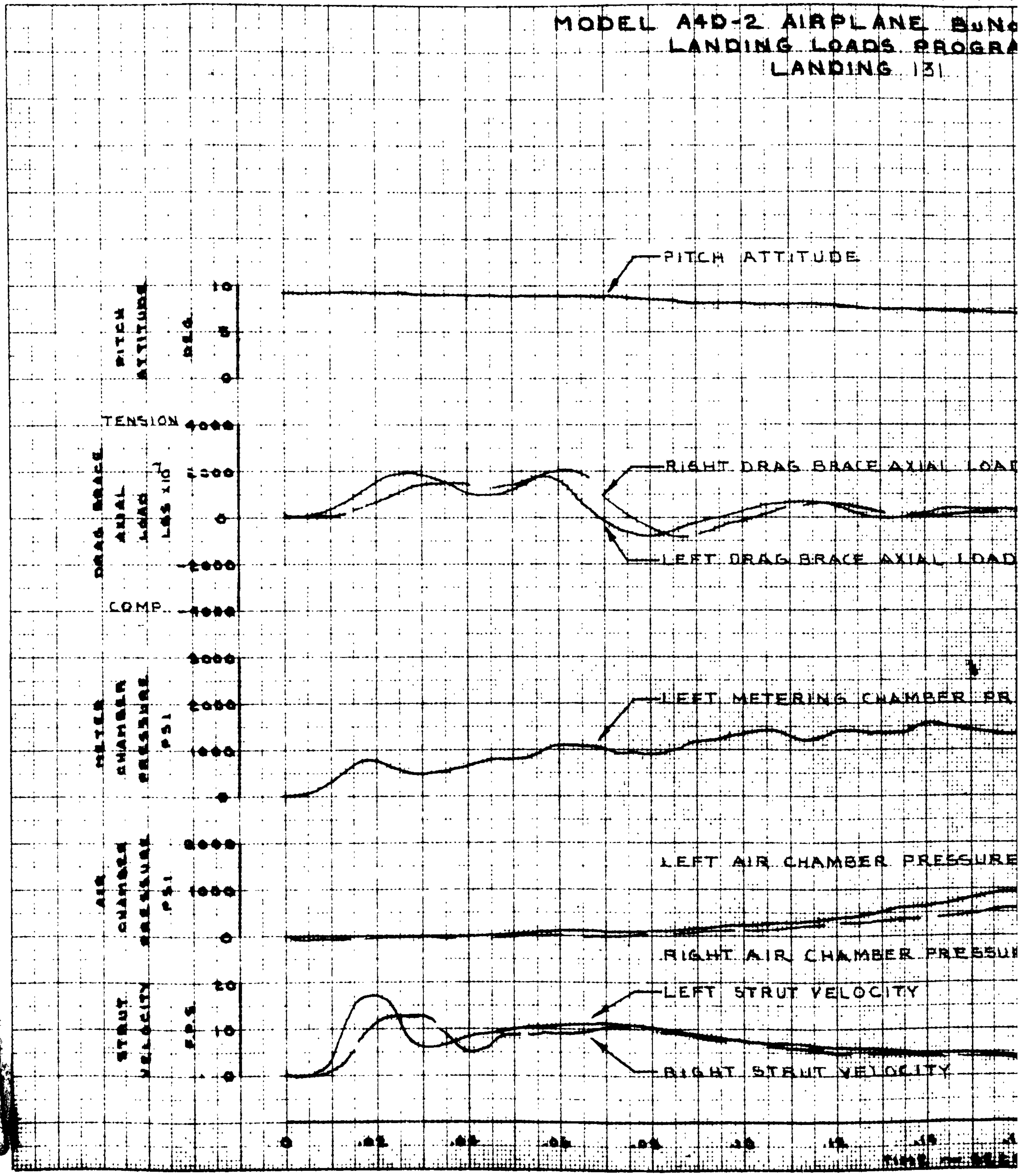
52

MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 131



FORM 25 ... (REV. 7 34)

PREPARED BY:
CHECKED BY
DATE
TITLE



K-E

53

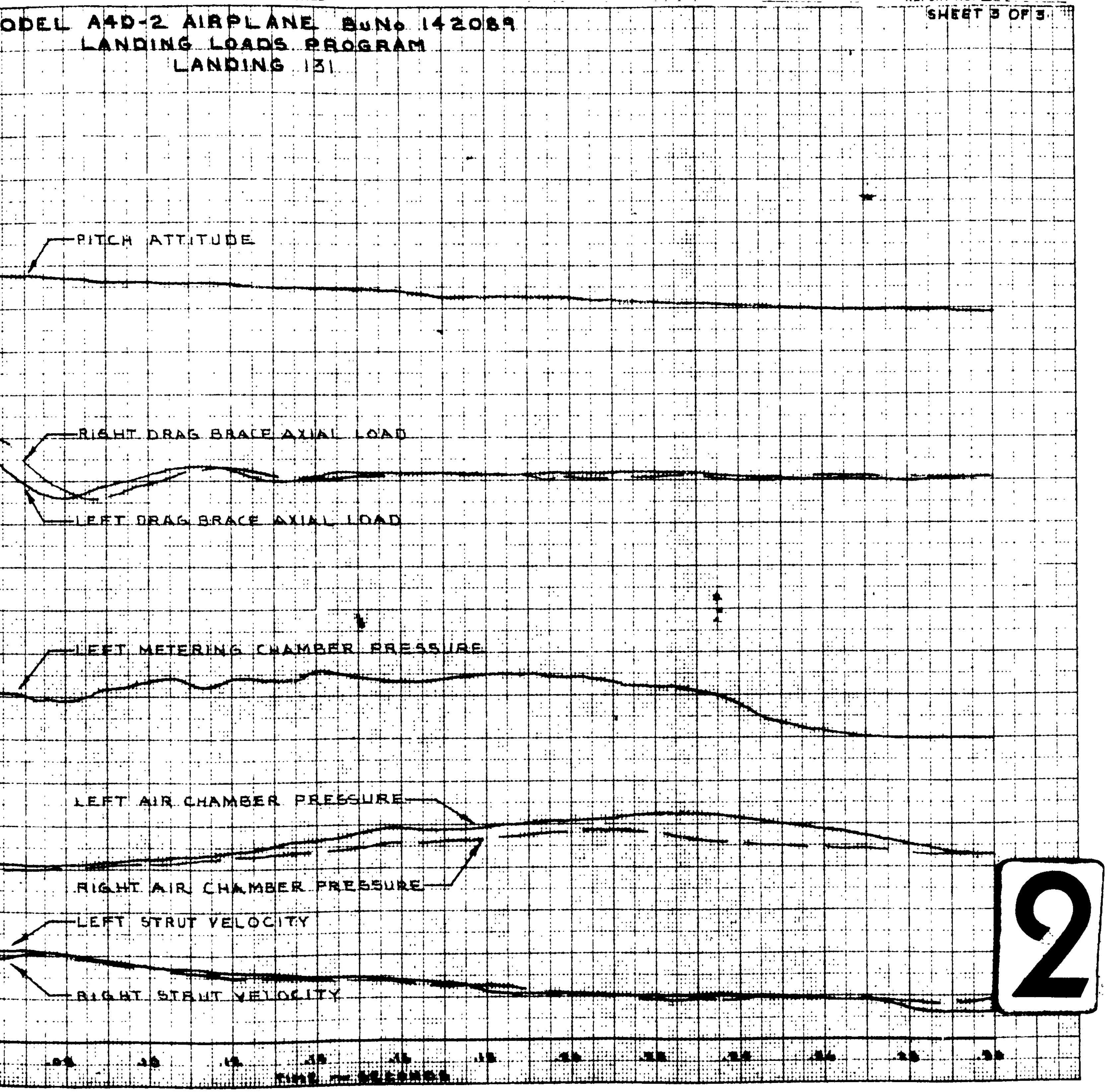
1

PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

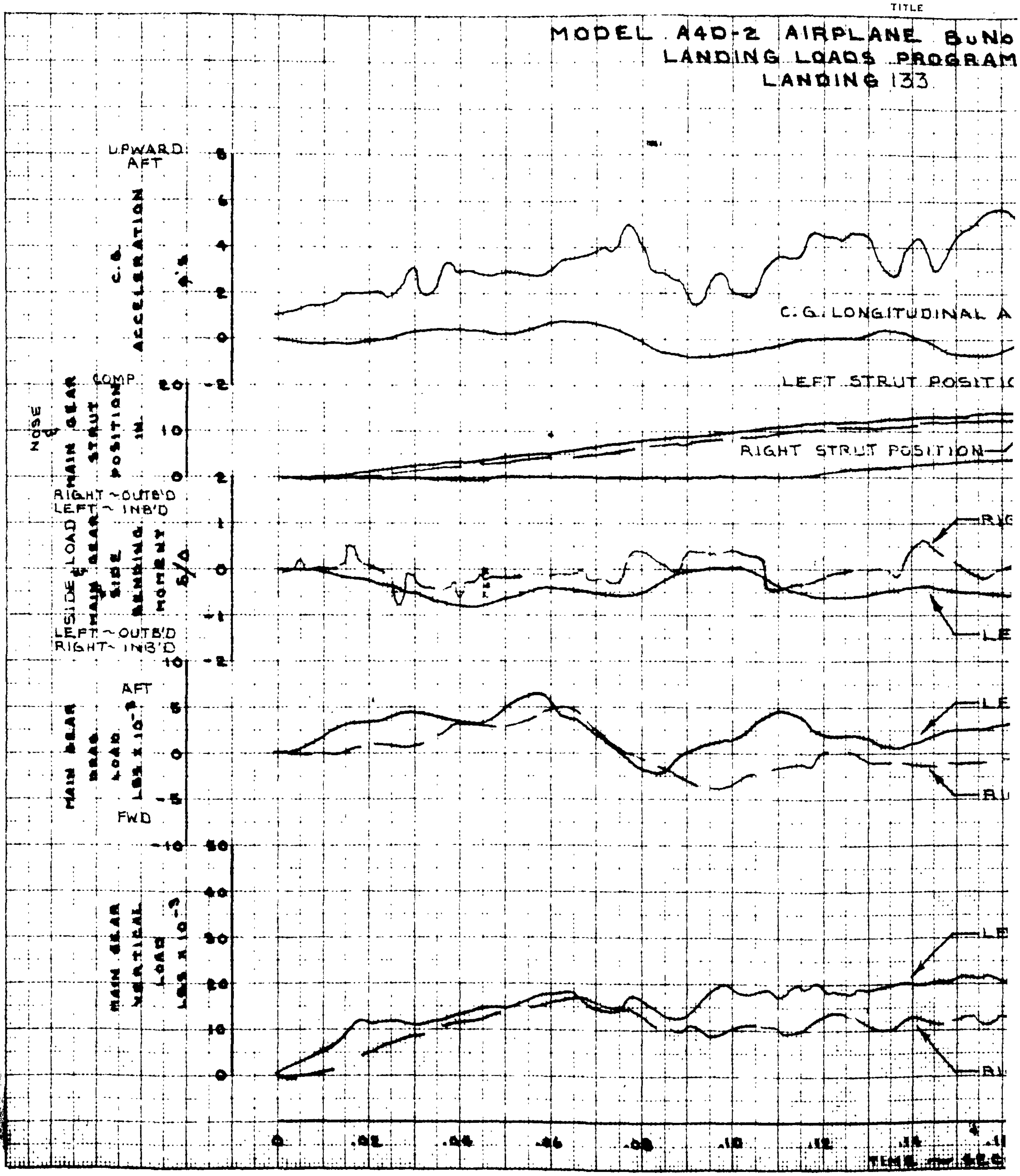
TESTING DIVISION

PAGE 8.4.30
MODEL A4D-2
REPORT NO. DEV-3616



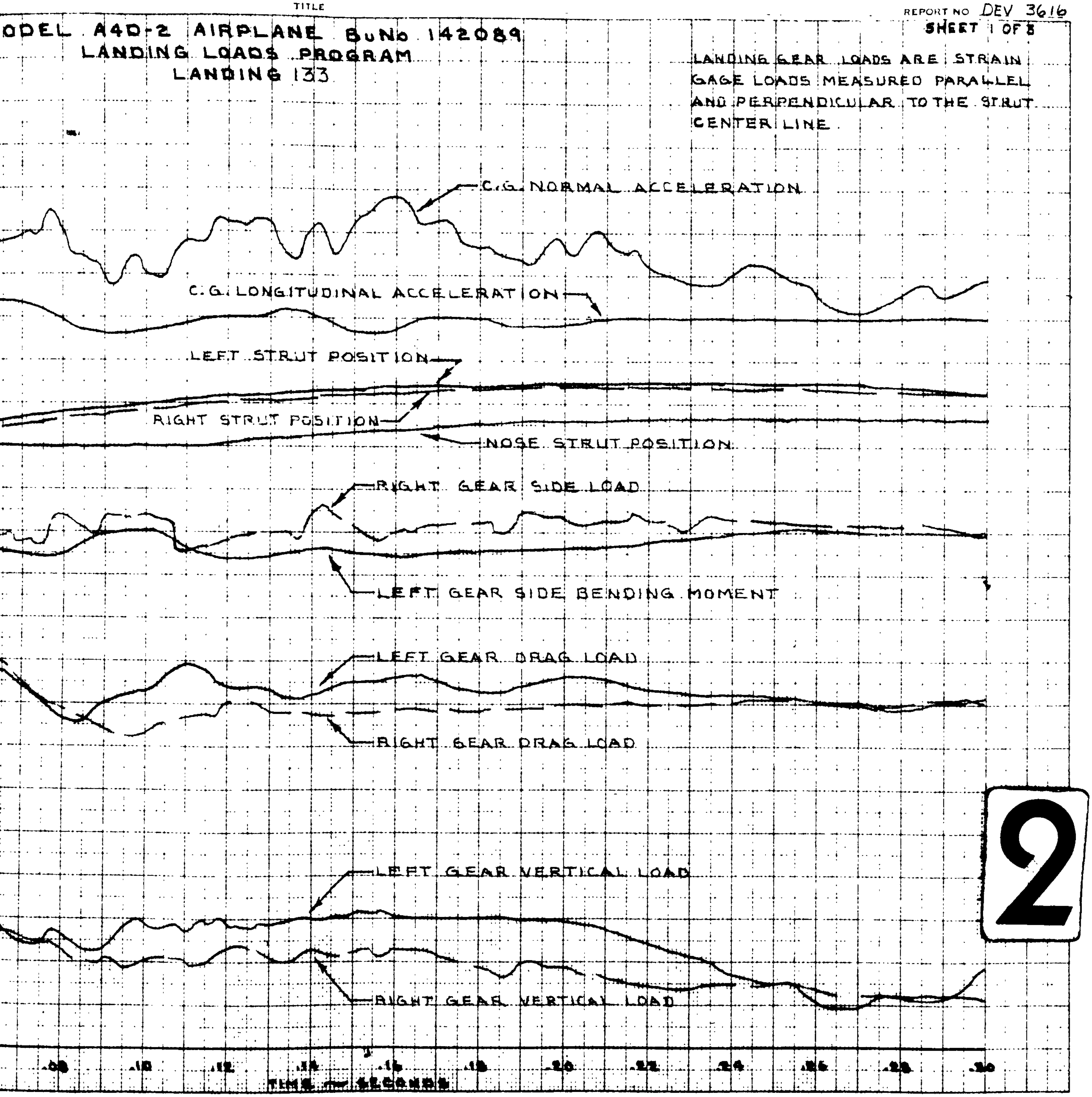
FORM 25 BP-1
(REV 7 54)

PREPARED BY
CHECKED BY
DATE
TITLE



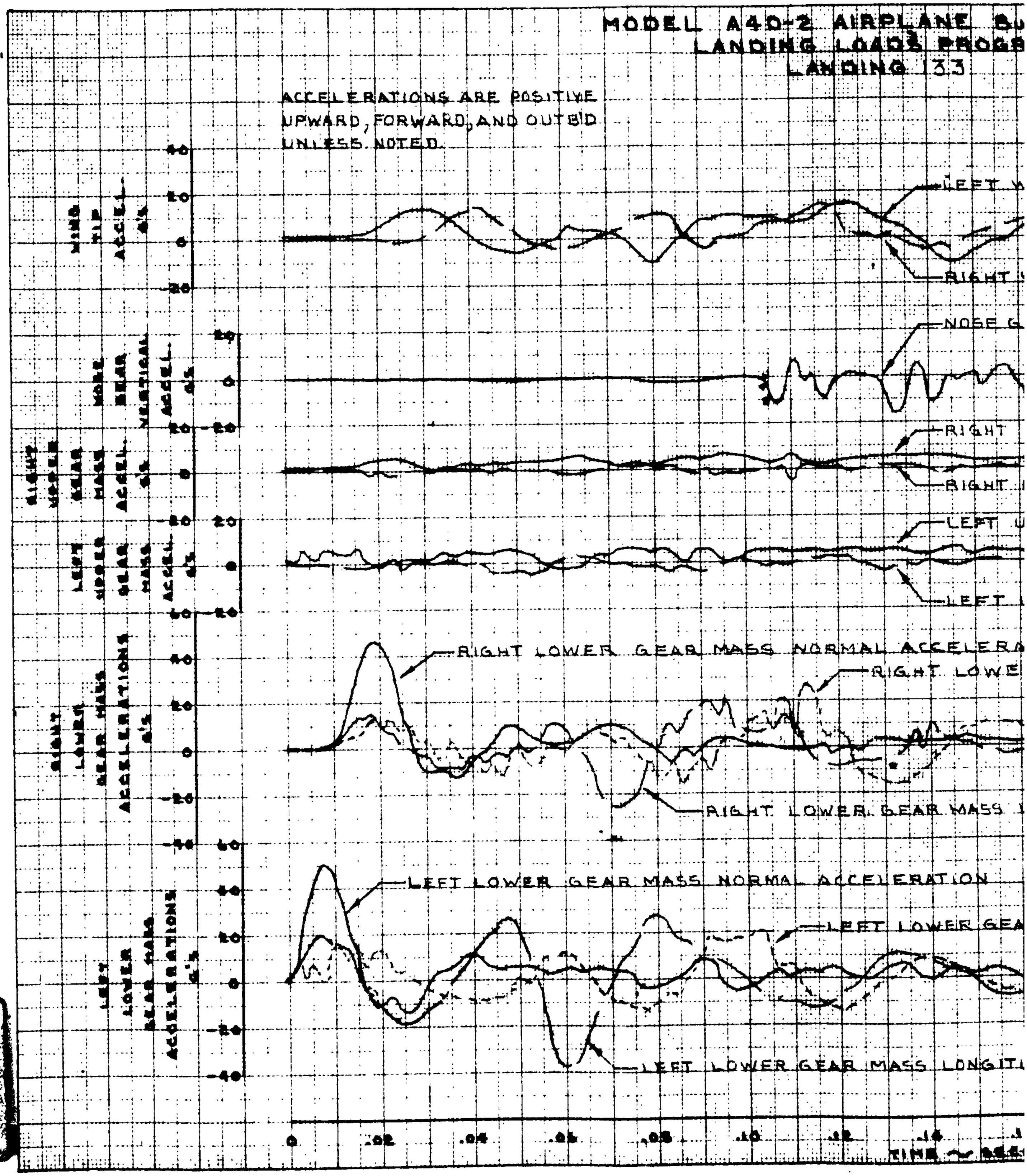
K+E ALBANENE

54


SHEET 1 OF 3
ODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 133
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE.
C.G. NORMAL ACCELERATION
C.G. LONGITUDINAL ACCELERATION
LEFT STRUT POSITION
RIGHT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
LEFT GEAR VERTICAL LOAD
RIGHT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS
2

FORM 25 SP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:



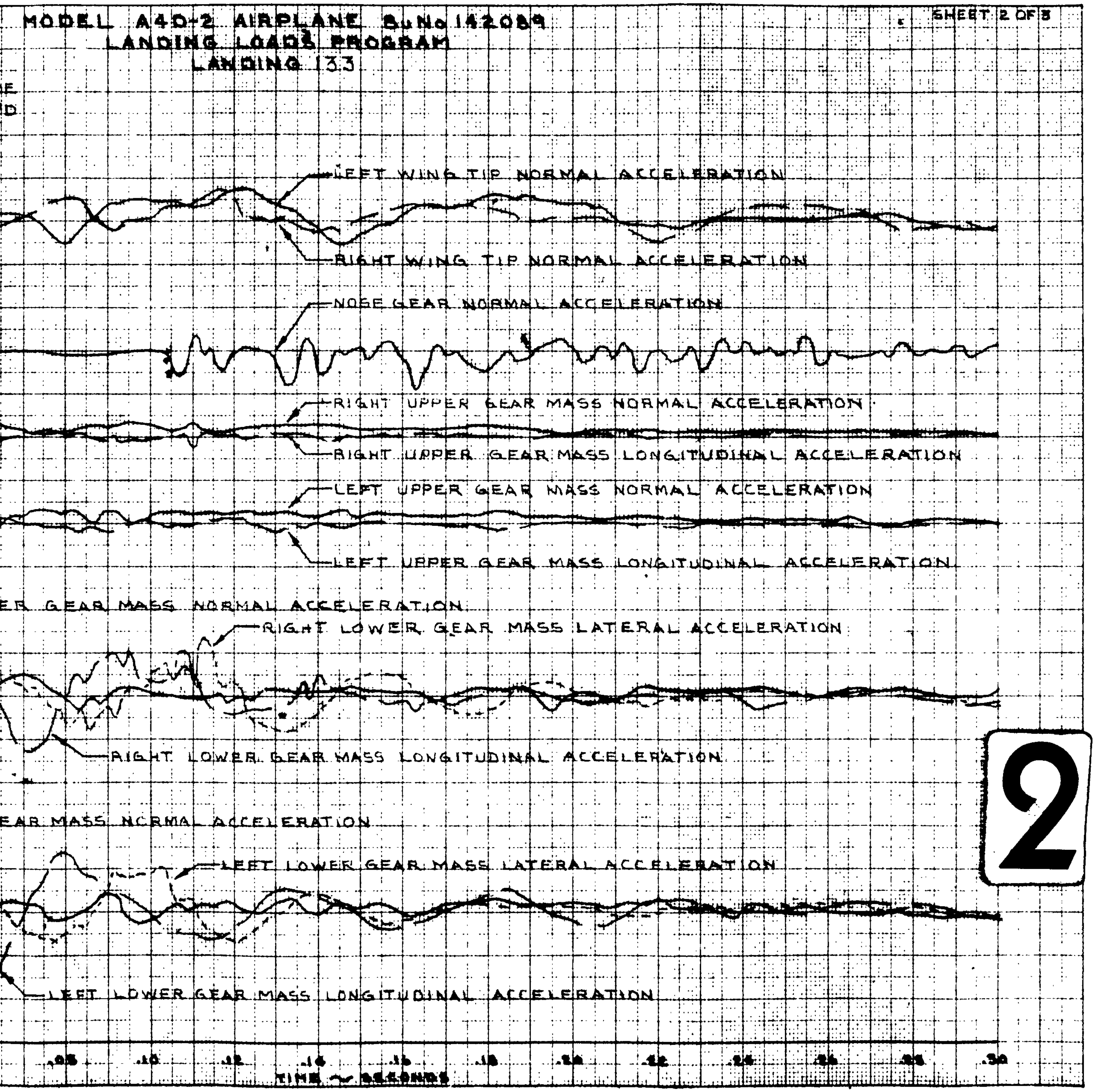
K-E

PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

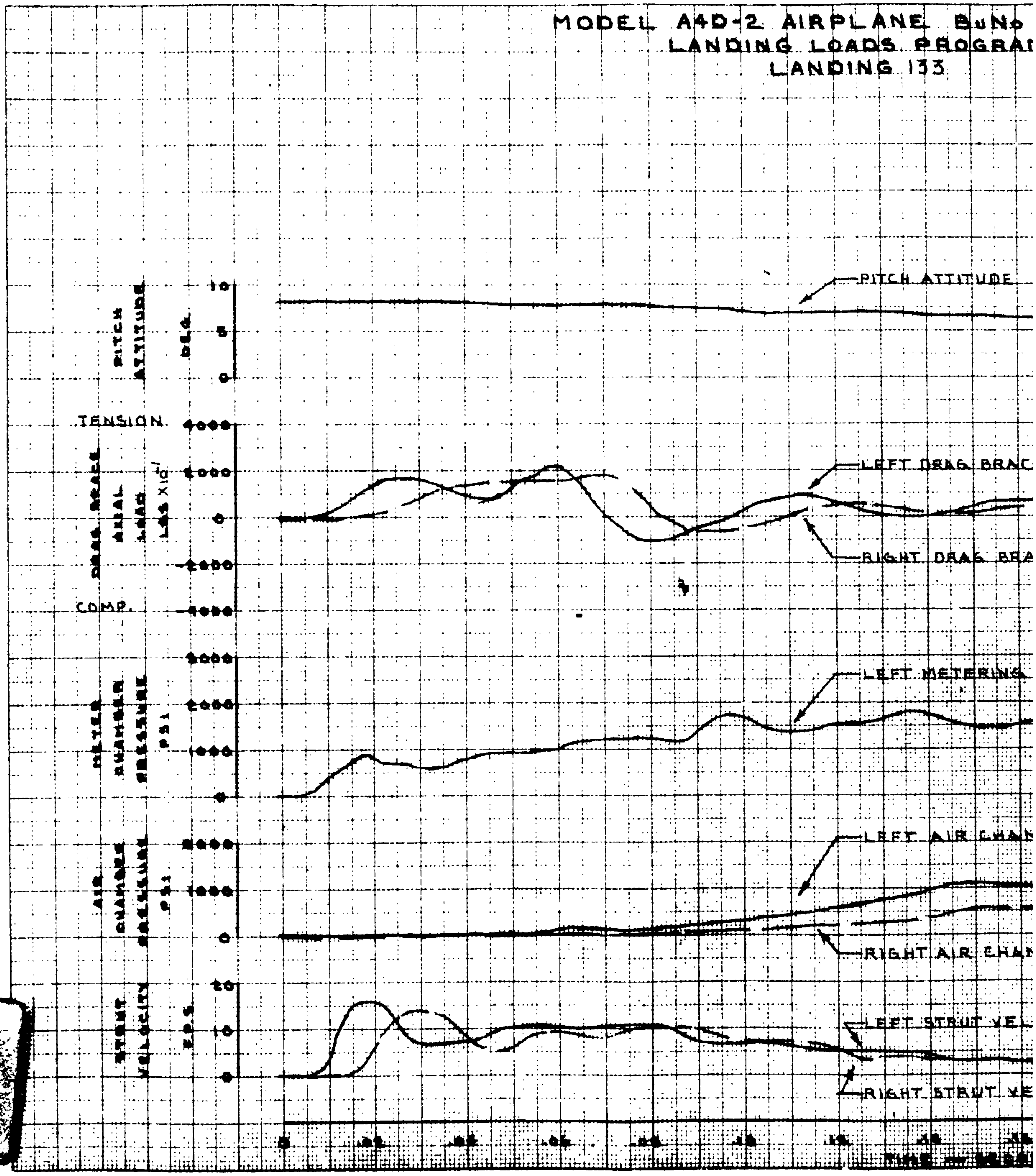
TESTING DIVISION

PAGE: 8.4.32
MODEL: A4D-2
REPORT NO.: DEV-3616

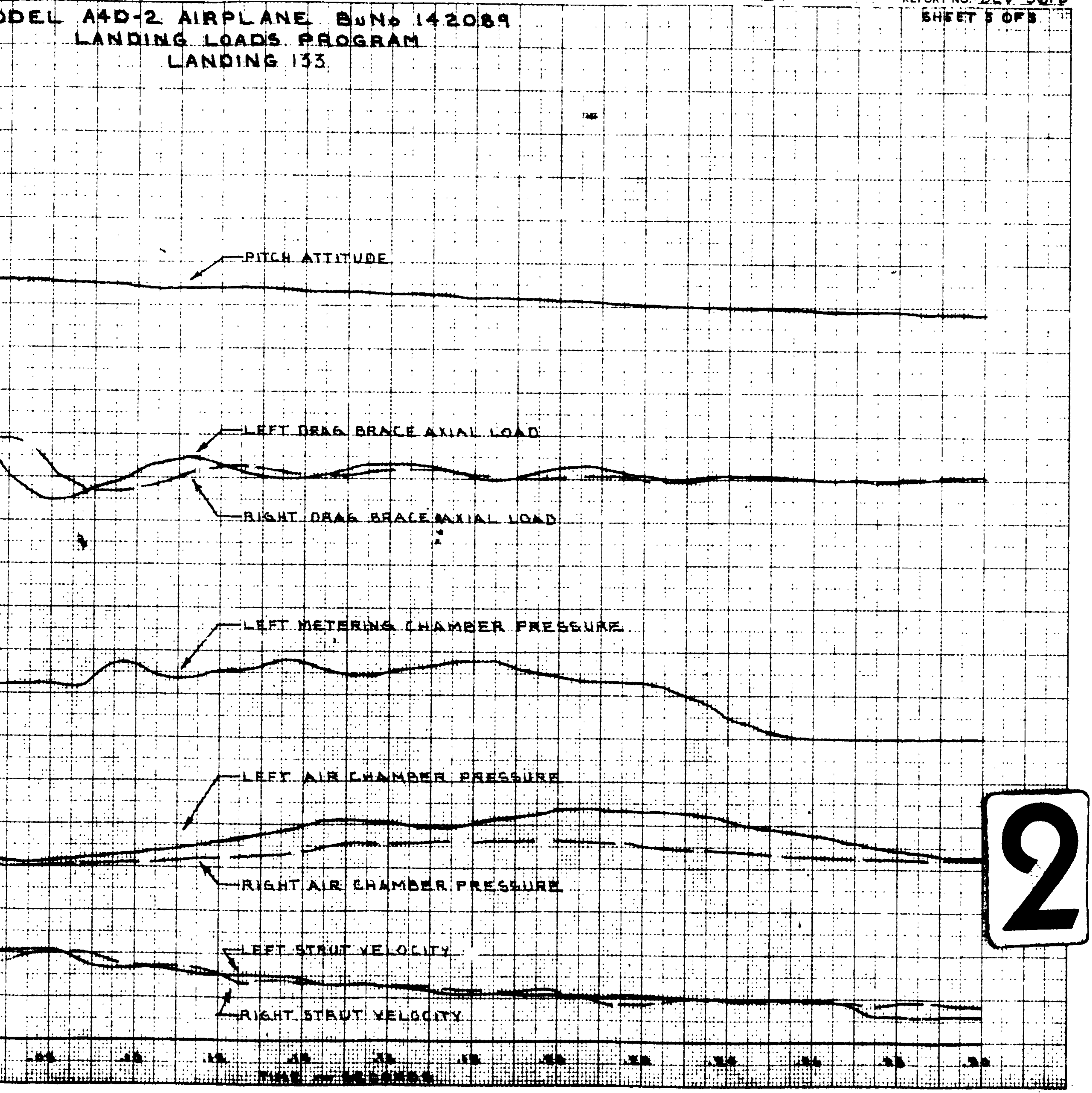


FORM 35 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE

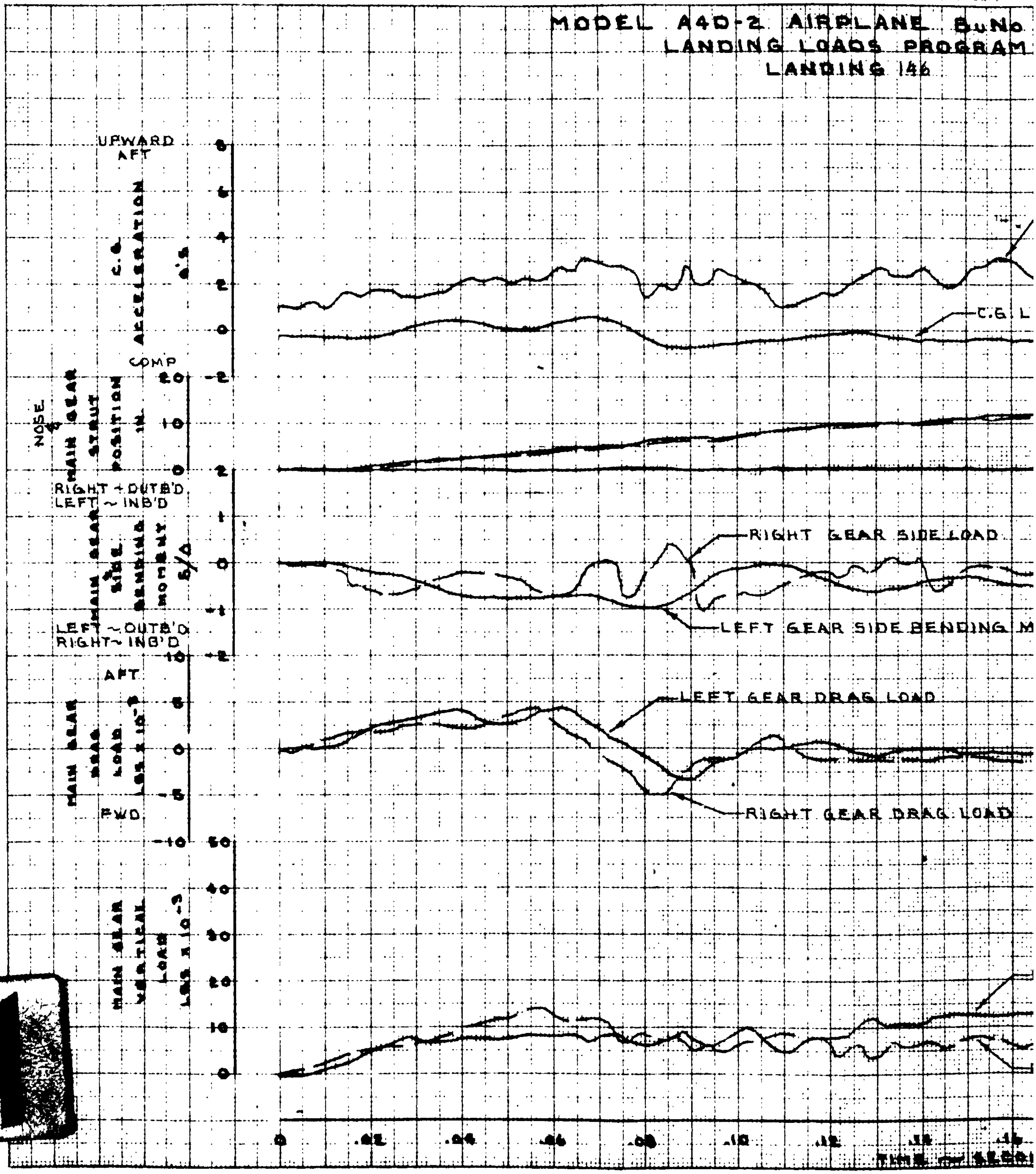


95


SHEET 5 OF 5
ODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 133
PITCH ATTITUDE
LEFT DRAG BRACE AXIAL LOAD
RIGHT DRAG BRACE AXIAL LOAD
LEFT METERING CHAMBER PRESSURE
LEFT AIR CHAMBER PRESSURE
RIGHT AIR CHAMBER PRESSURE
LEFT STRUT VELOCITY
RIGHT STRUT VELOCITY
2

FORM 25 BP-1
(REV. 7-64)

PREPARED BY
CHECKED BY
DATE
TITLE



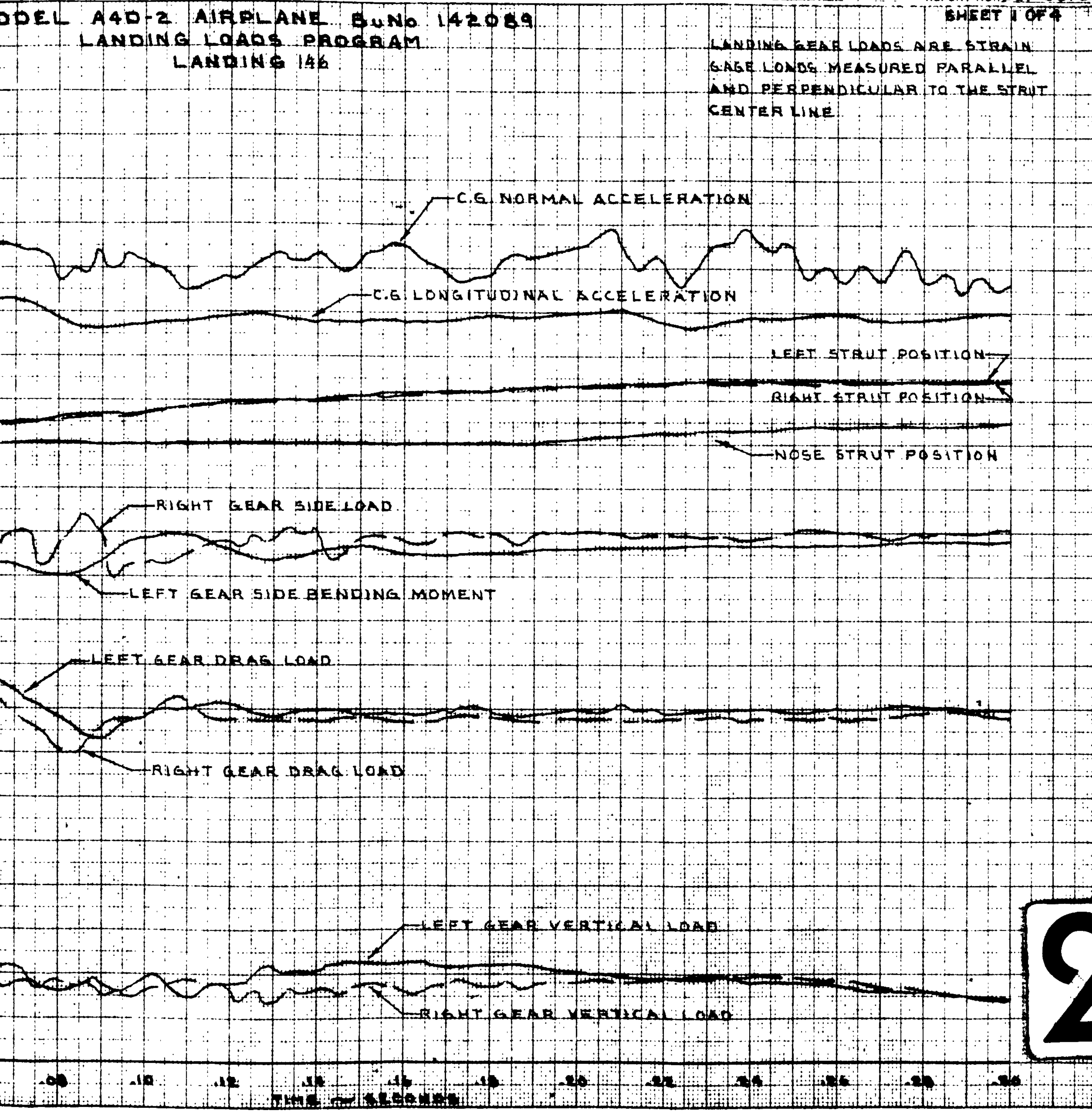
K+E ALBANENE 195L TRACING PAPER

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

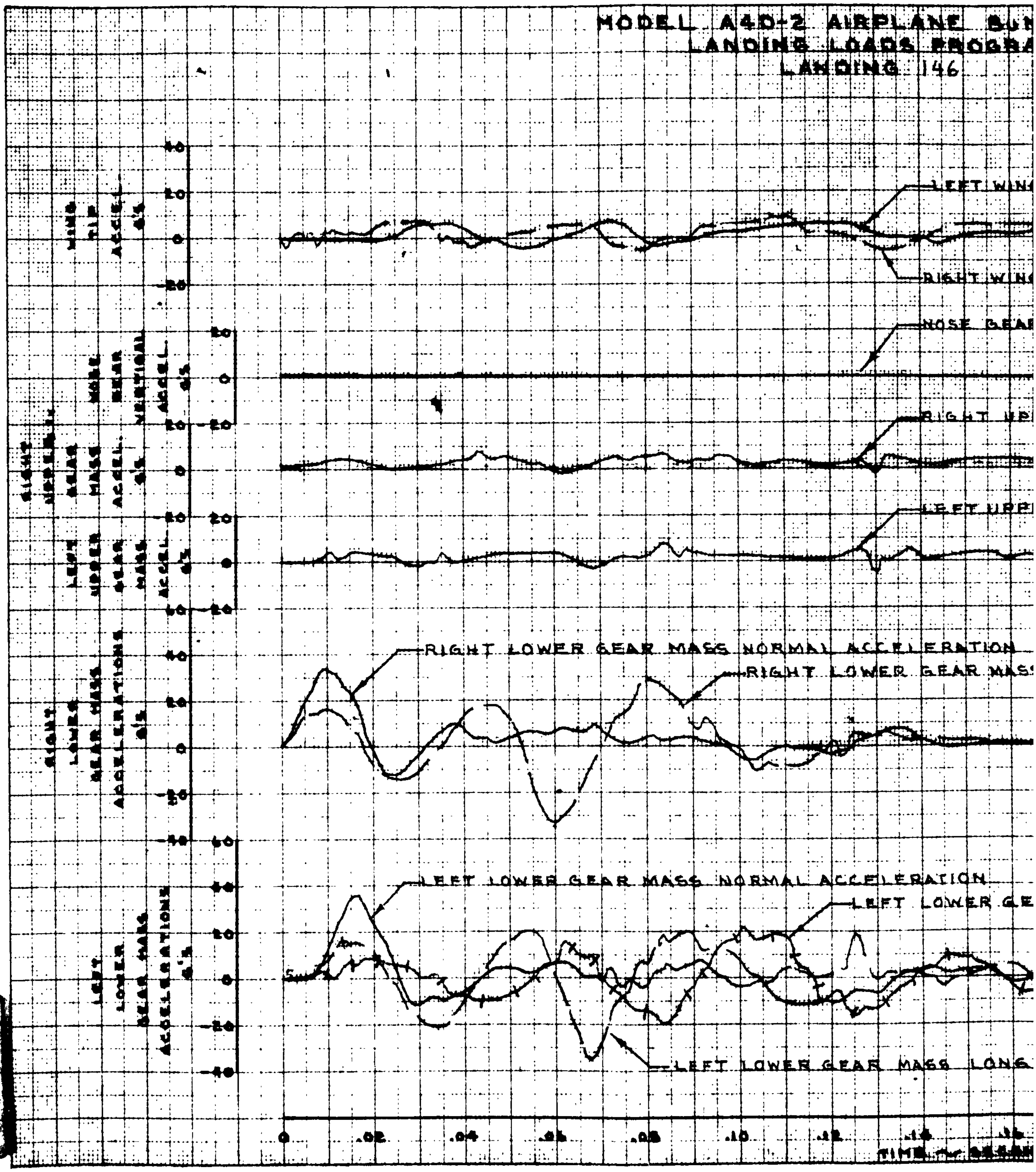
PAGE 8.4.34
MODEL A4D-2
REPORT NO. DEV-3616



2

FORM 25 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:



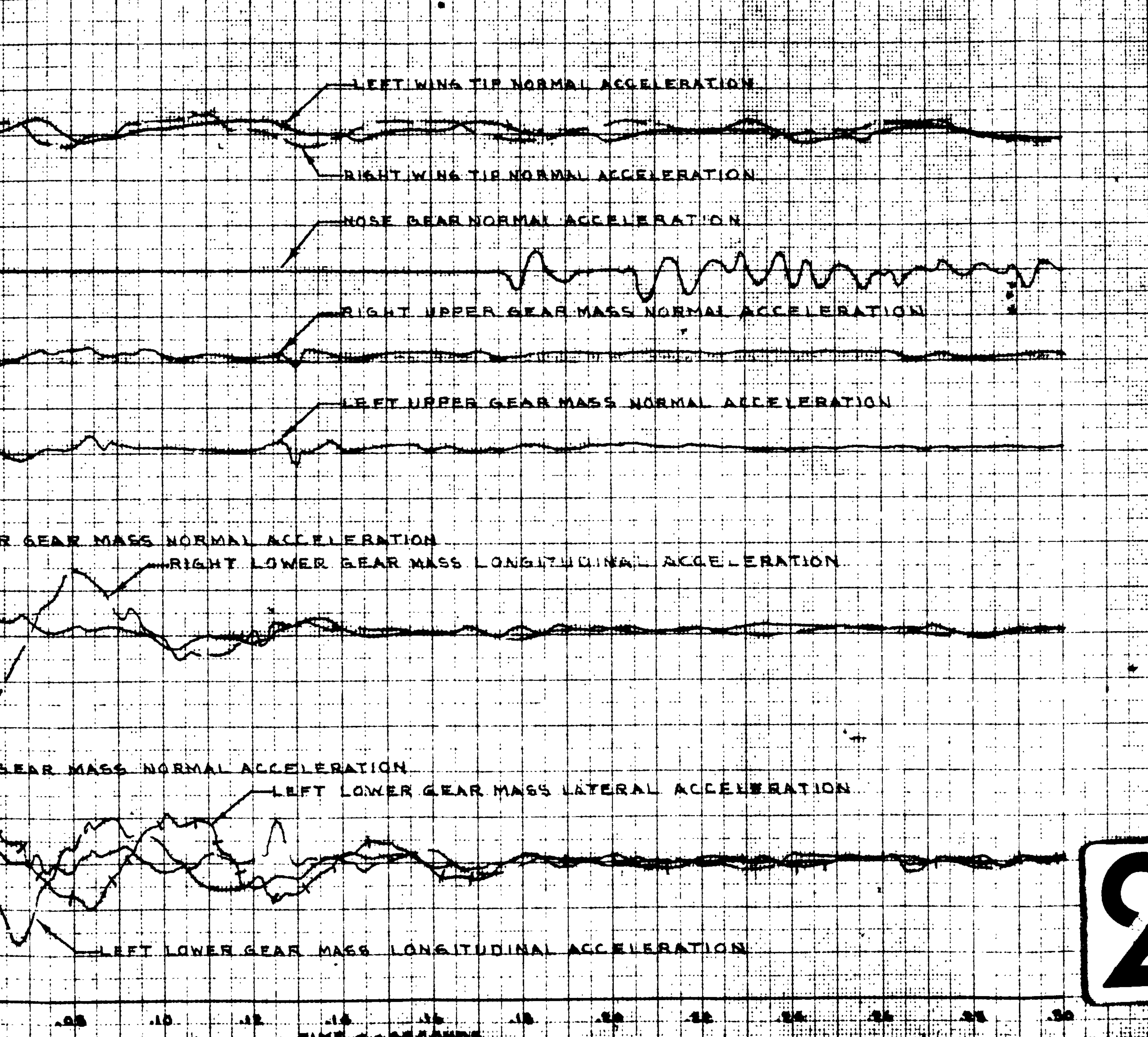
85

1

PREPARED BY:
CHECKED BY
DATE
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.
TESTING DIVISION

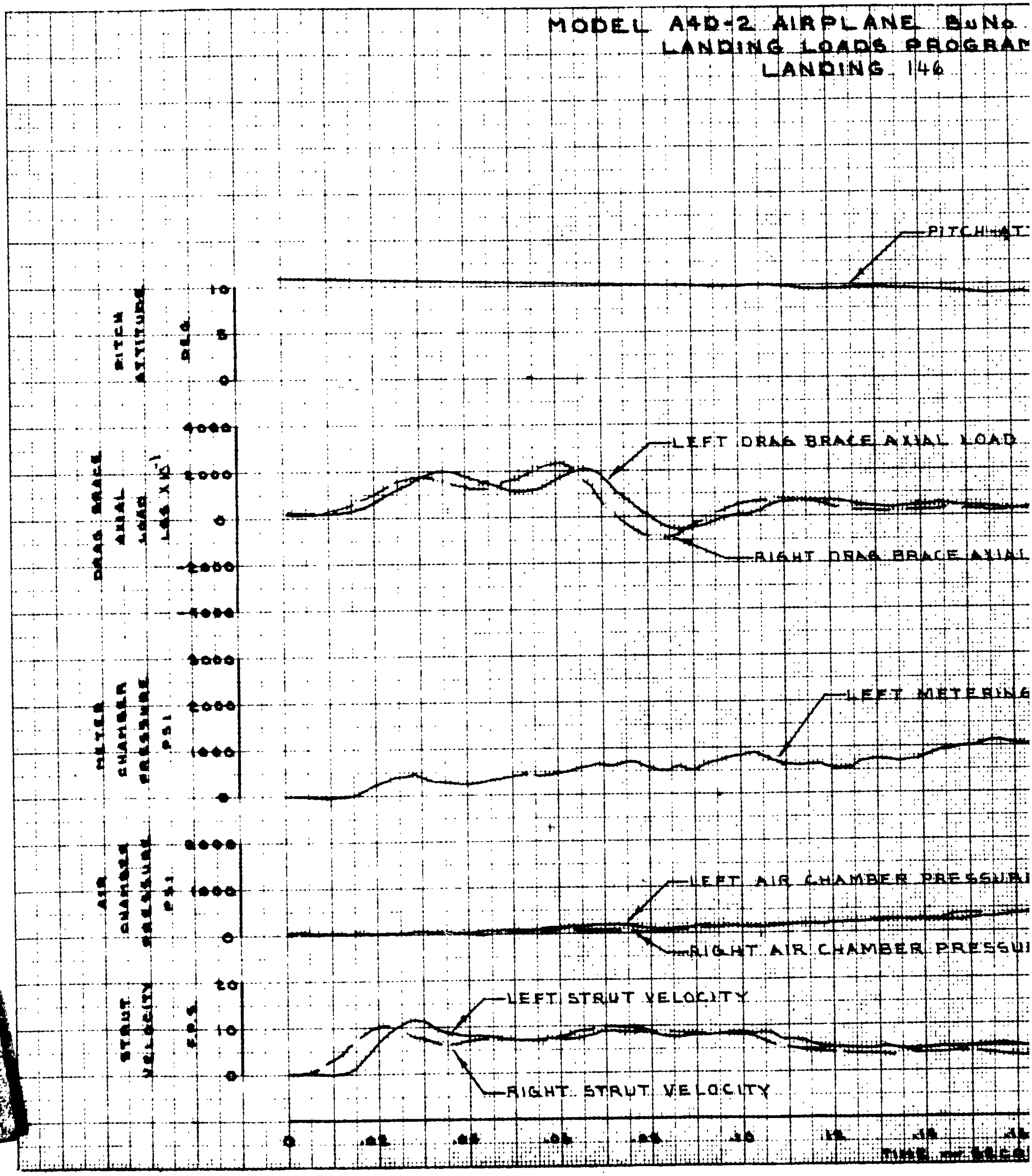
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 146



2

FORM 25 BP 1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE

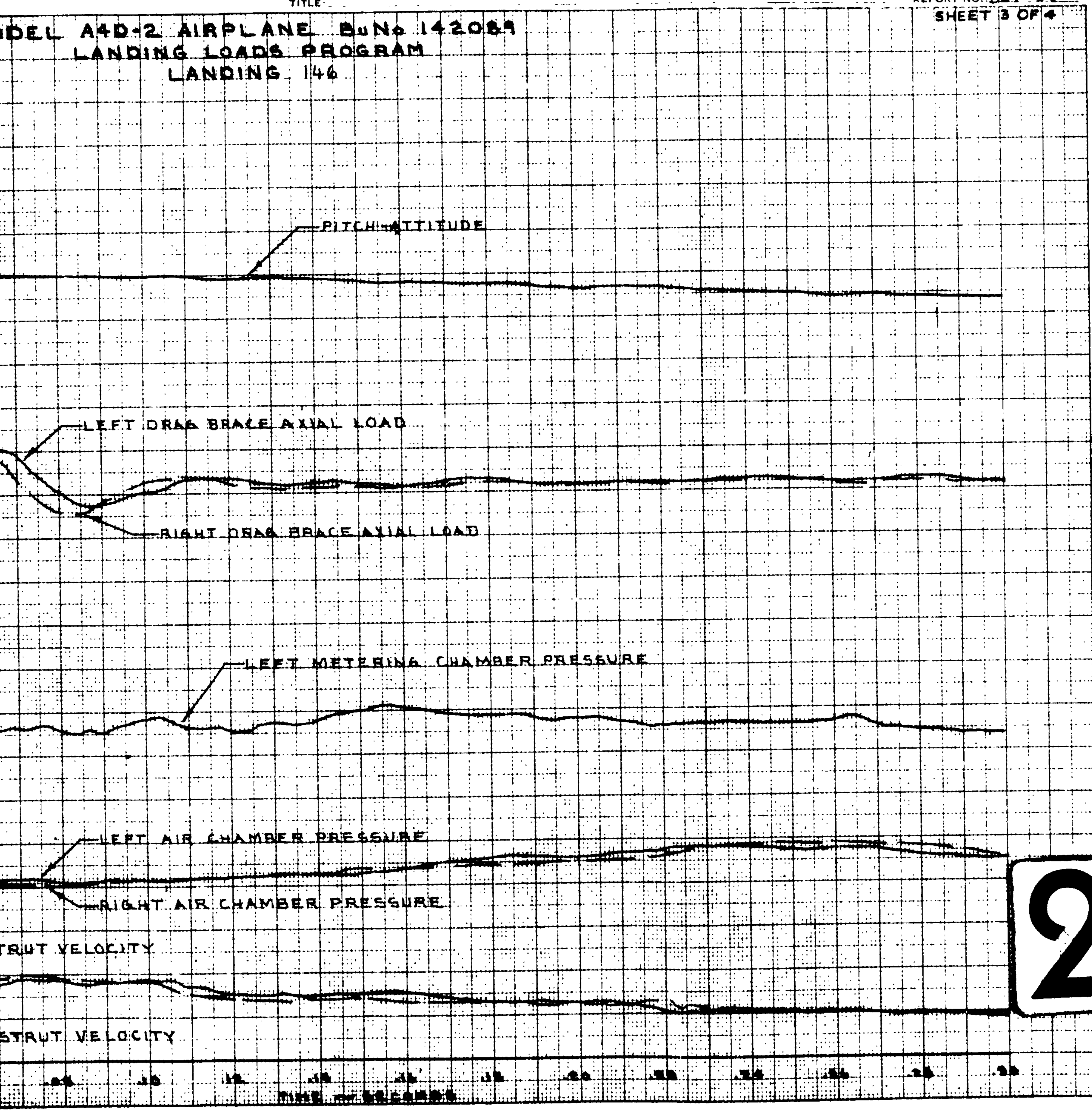


PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

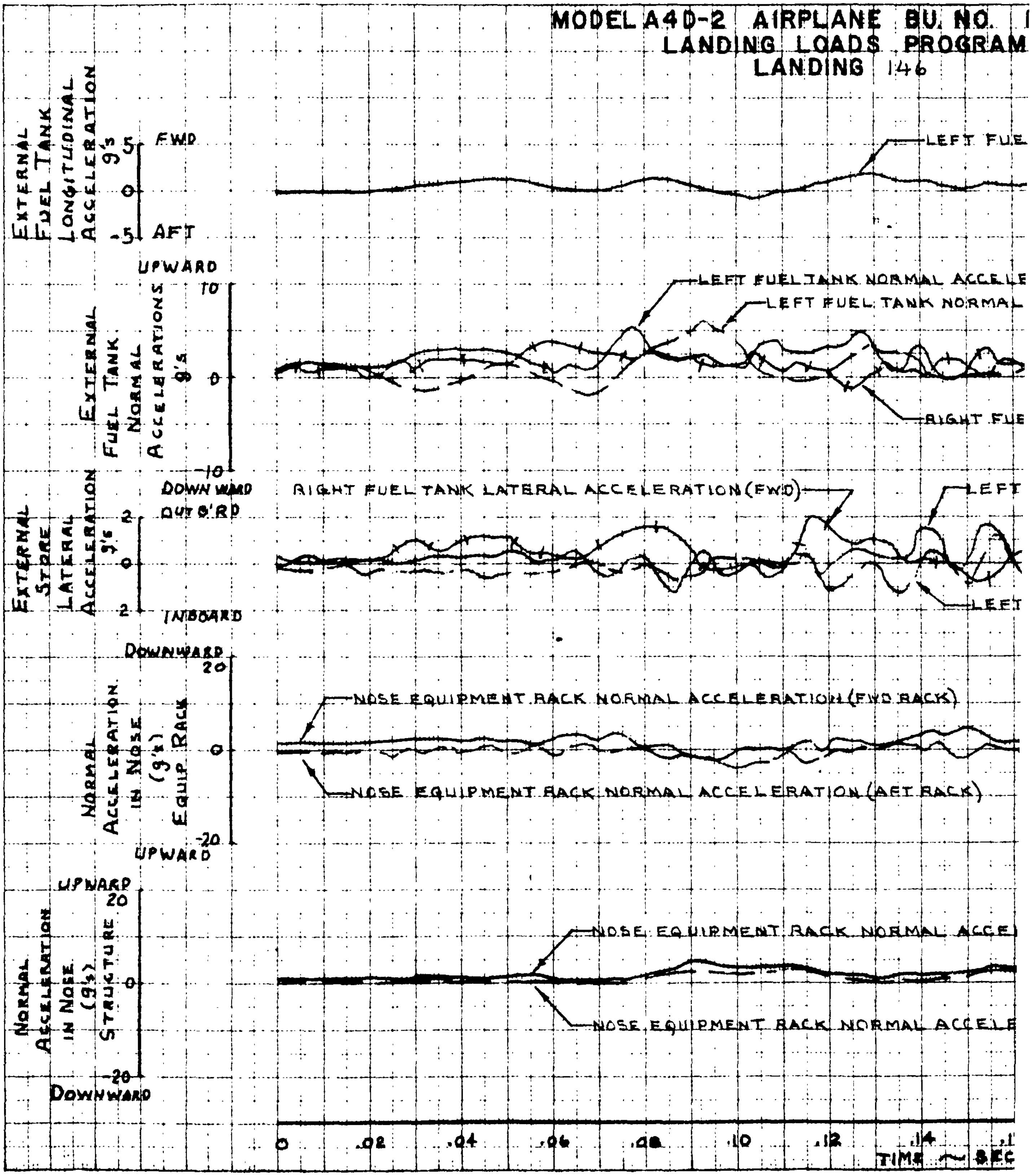
TESTING DIVISION

MODEL: A4D-2
REPORT NO. DEV-3616



FORM 26 DP 1 (REV. 7-64)

PREPARED BY:
CHECKED BY:
DATE
TITLE



07

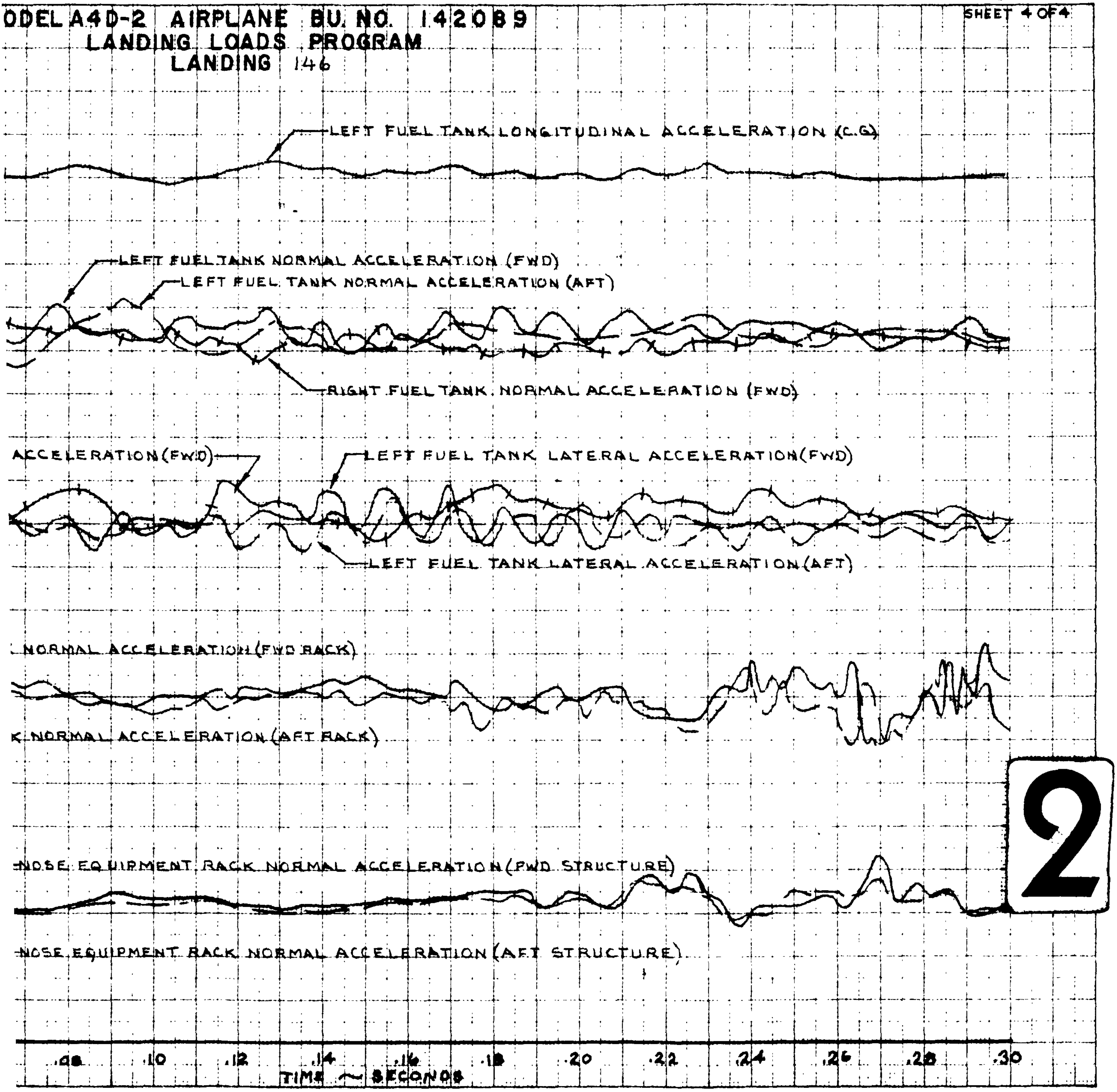
1

PREPARED BY:
CHECKED BY:
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

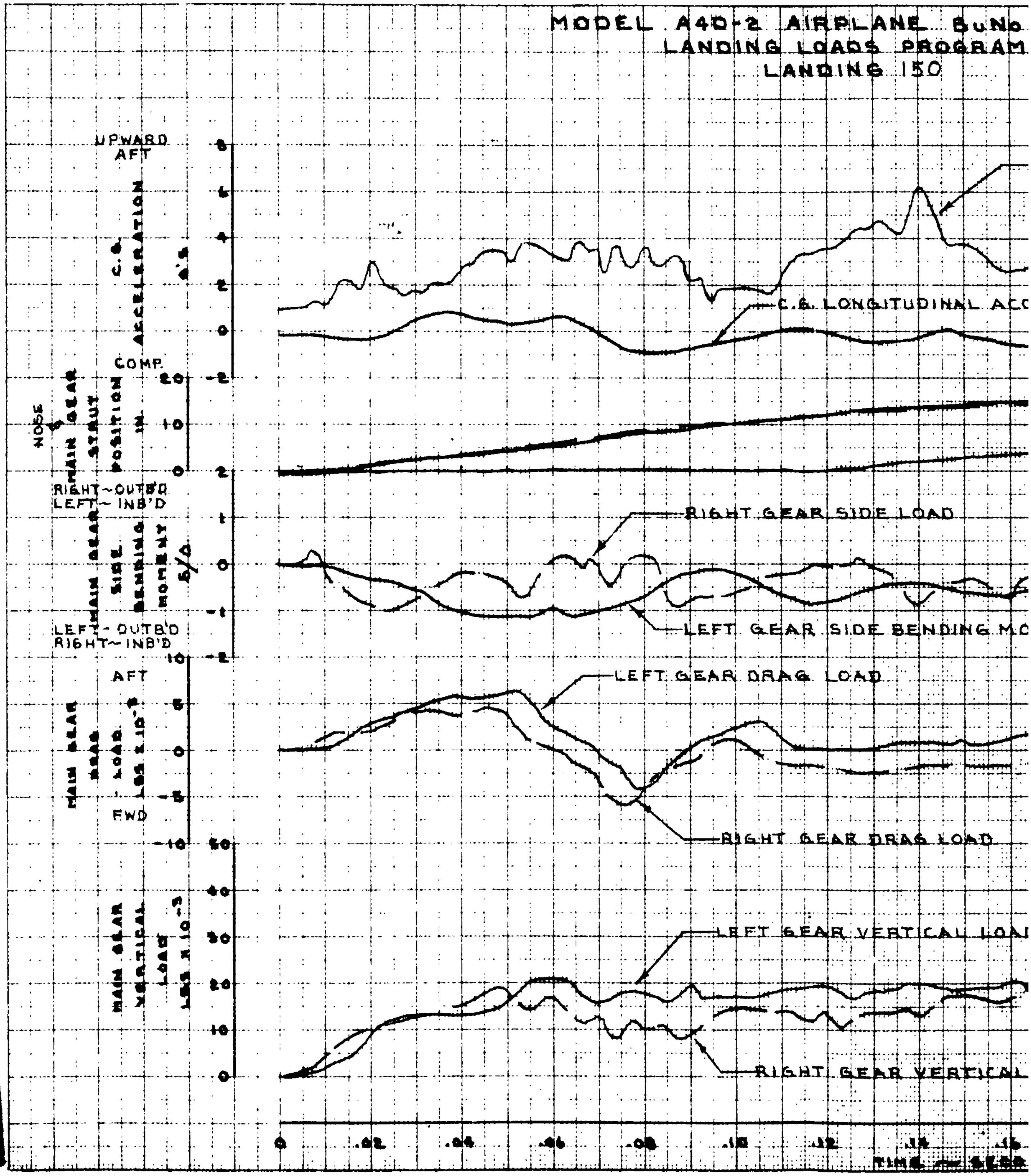
TESTING DIVISION

PAGE: 48.4.37
MODEL: A4D-2
REPORT NO. DEV-3616

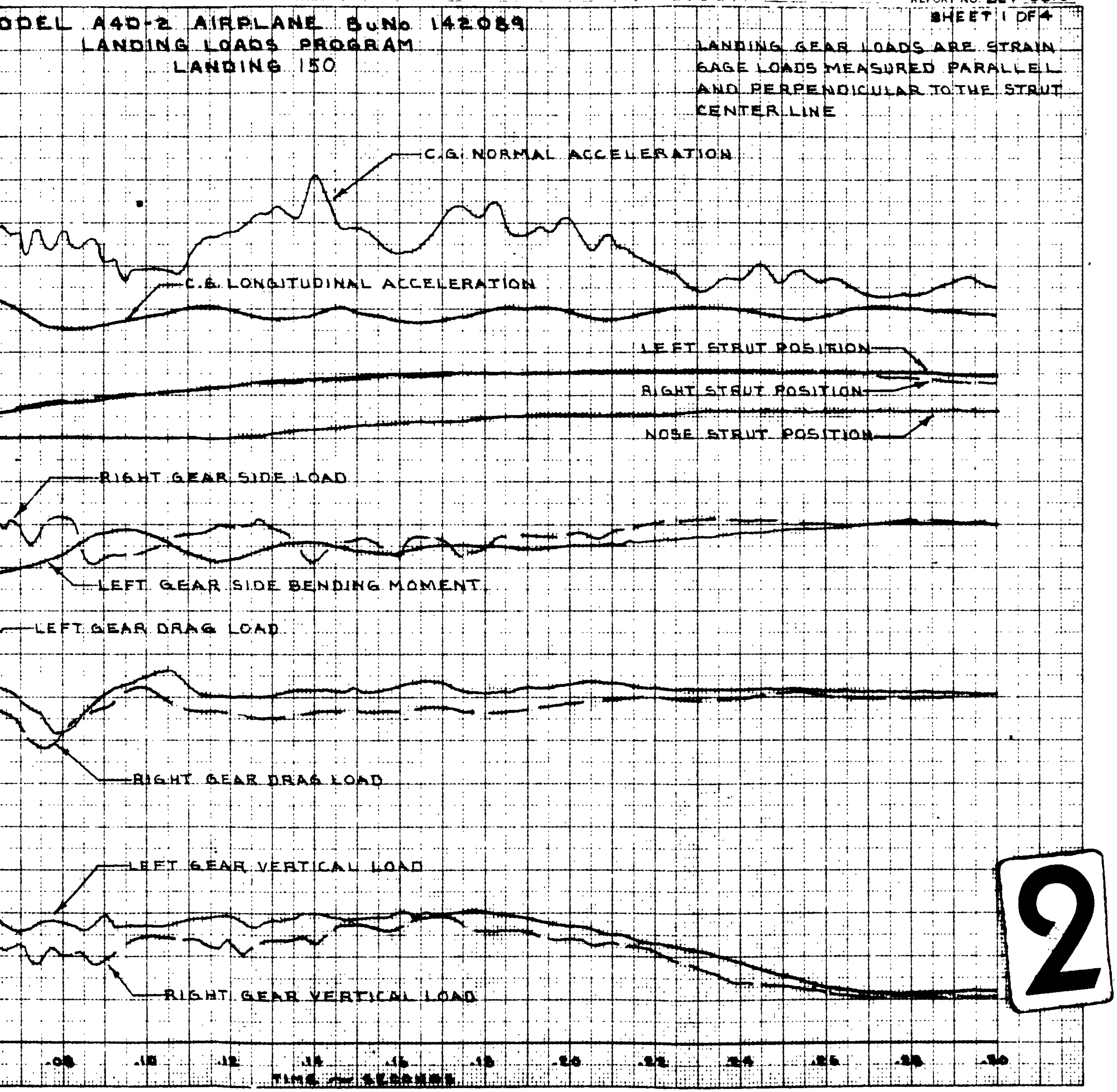


FORM 25 DP-1
(REV. 7-54)

PREPARED BY.
CHECKED BY
DATE
TITLE

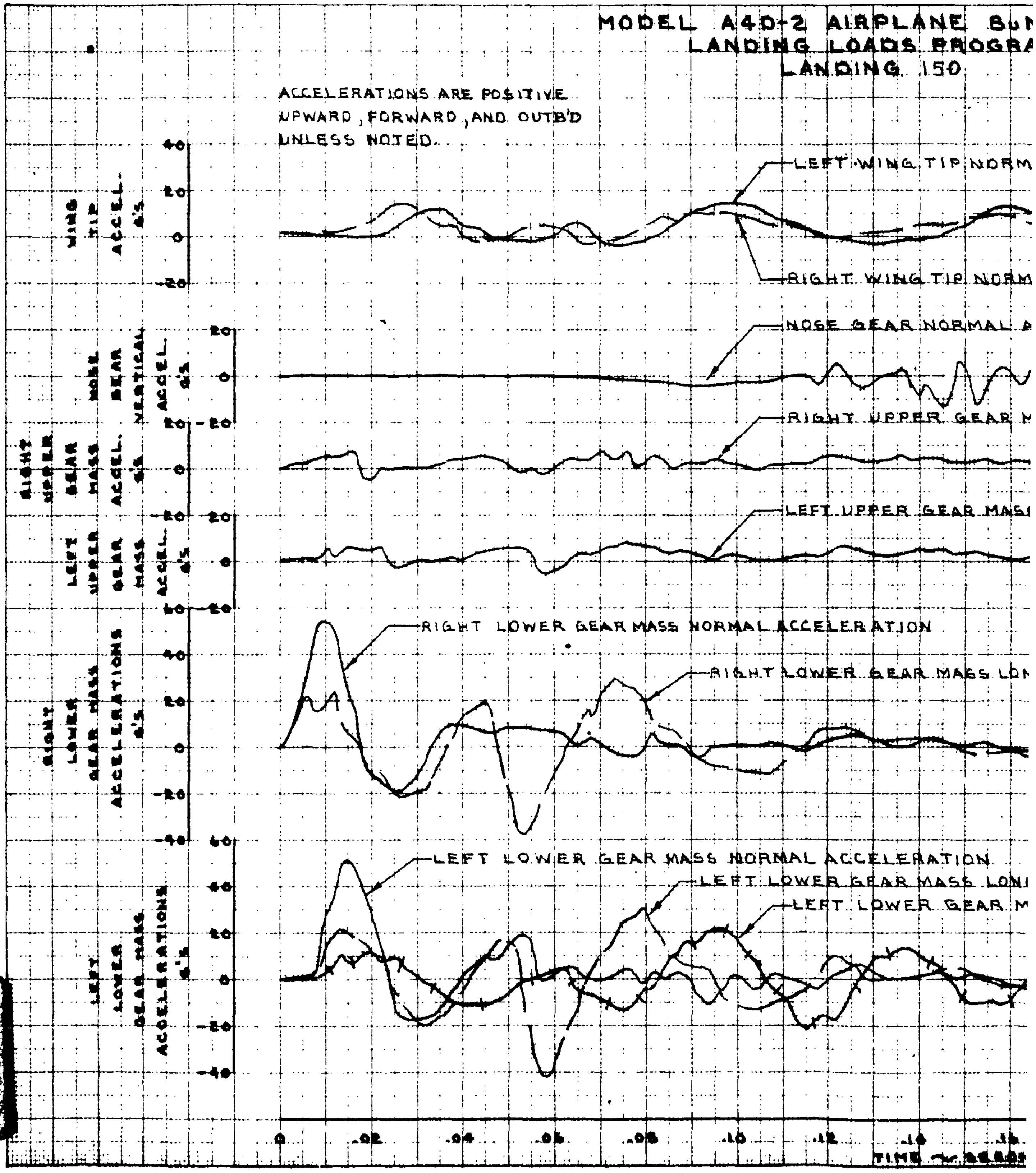


K+E ALBANENE 195L ® TRACING PAPER

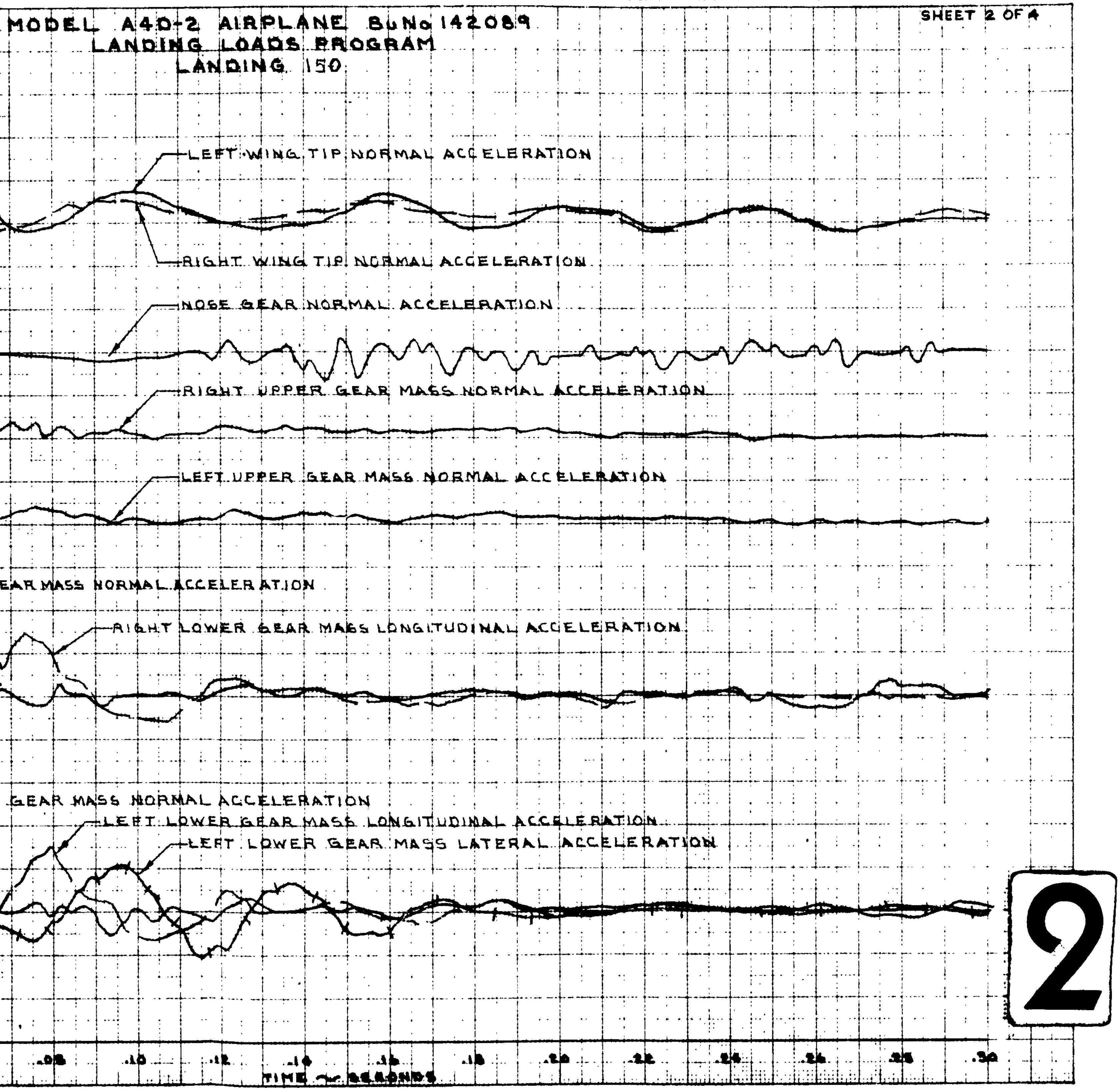

SHEET 1 OF 4
ODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 150
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE
C.G. NORMAL ACCELERATION
C.G. LONGITUDINAL ACCELERATION
LEFT STRUT POSITION
RIGHT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
LEFT GEAR VERTICAL LOAD
RIGHT GEAR VERTICAL LOAD
2
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

FORM 25 BF-1
(REV. 7-54)

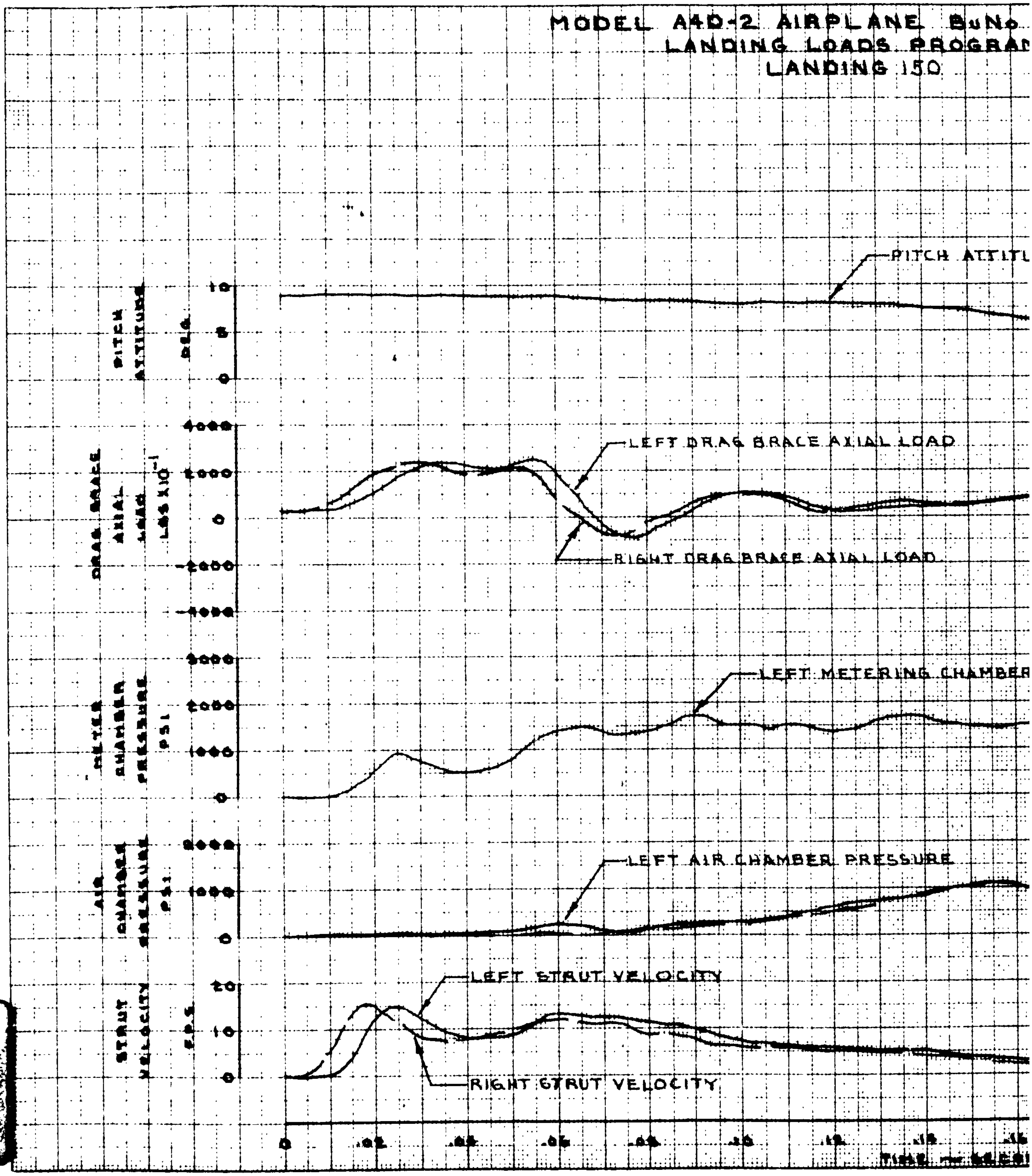
PREPARED BY
CHECKED BY
DATE
TITLE



K-E ALBANENE


MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 150
LEFT WING TIP NORMAL ACCELERATION
RIGHT WING TIP NORMAL ACCELERATION
NOSE GEAR NORMAL ACCELERATION
RIGHT UPPER GEAR MASS NORMAL ACCELERATION
LEFT UPPER GEAR MASS NORMAL ACCELERATION
EAR MASS NORMAL ACCELERATION
RIGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION
GEAR MASS NORMAL ACCELERATION
LEFT LOWER GEAR MASS LONGITUDINAL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
2
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

PREPARED BY:
CHECKED BY
DATE
TITLE

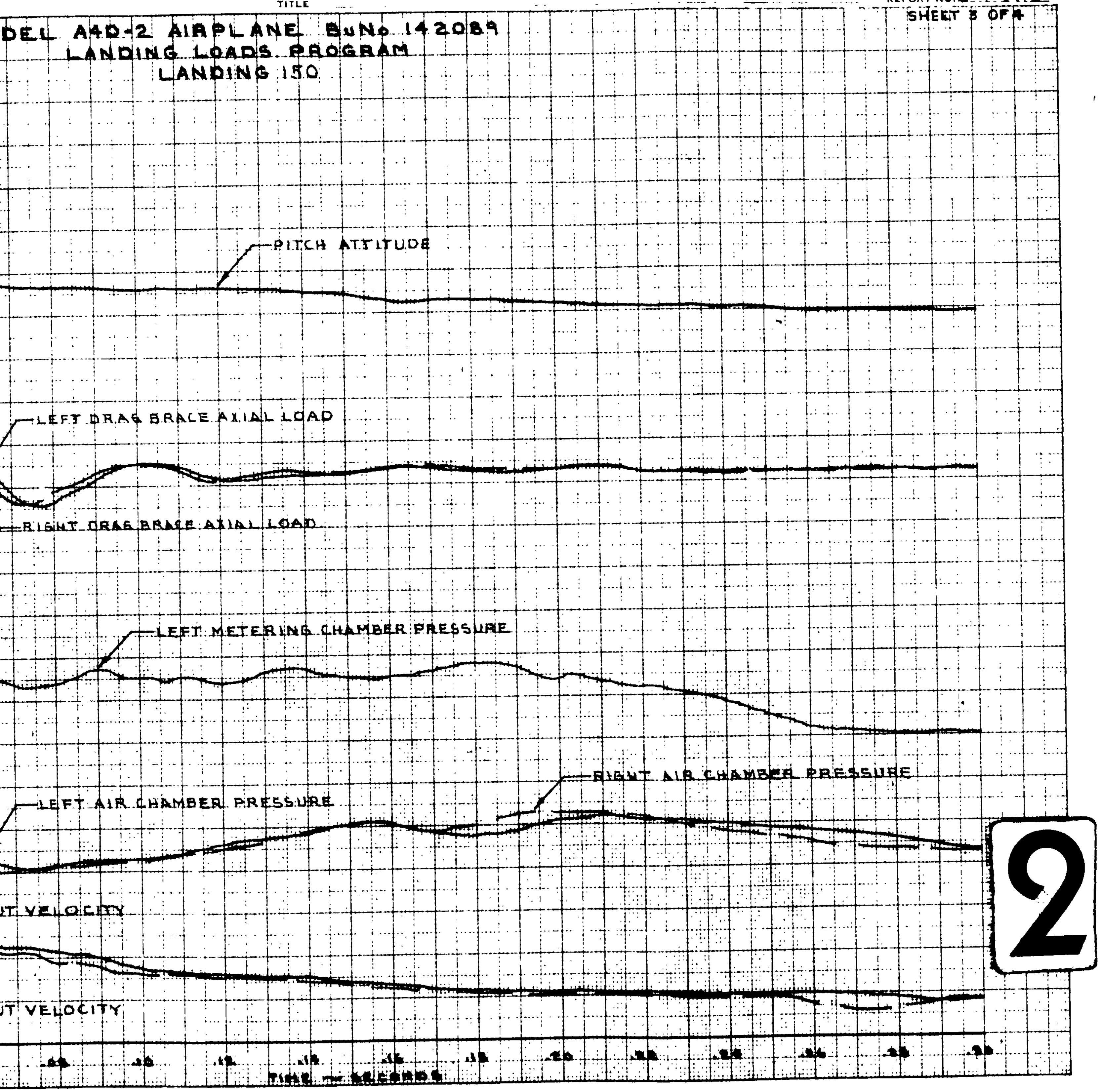


PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

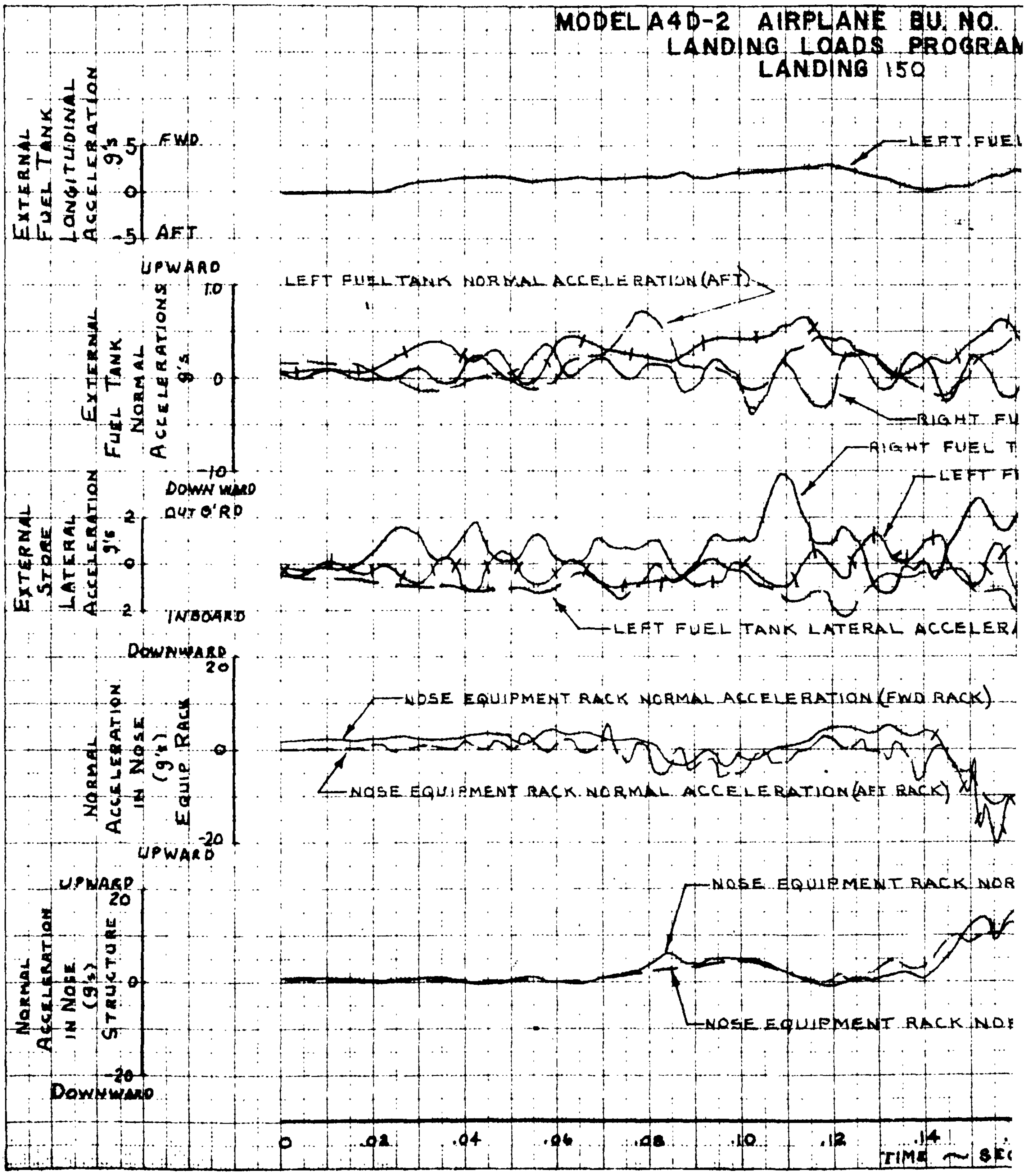
TESTING DIVISION

PAGE: 8.440
MODEL: A4D-2
REPORT NO. DEV-3616



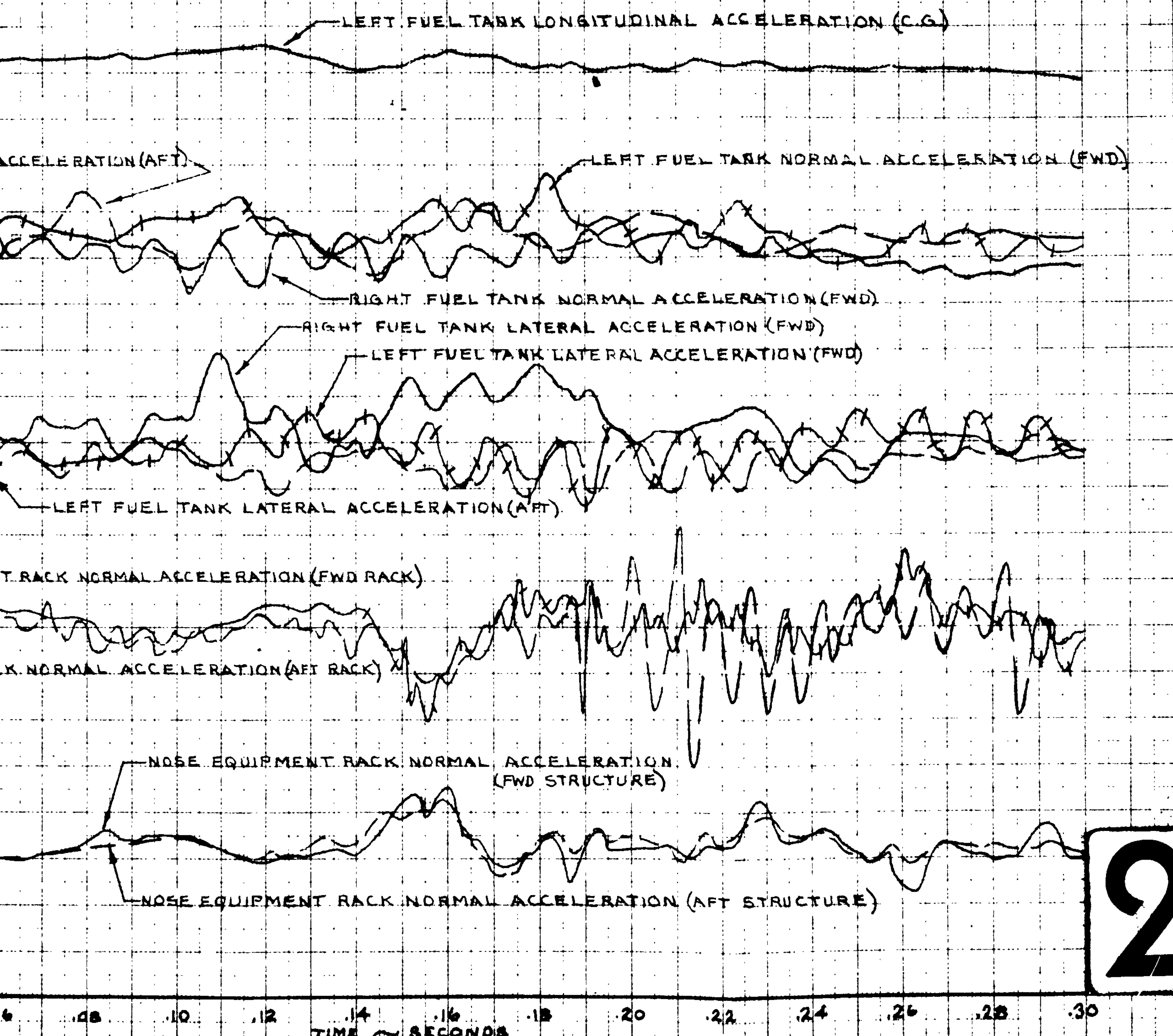
FORM 25 DP-1 (REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



69

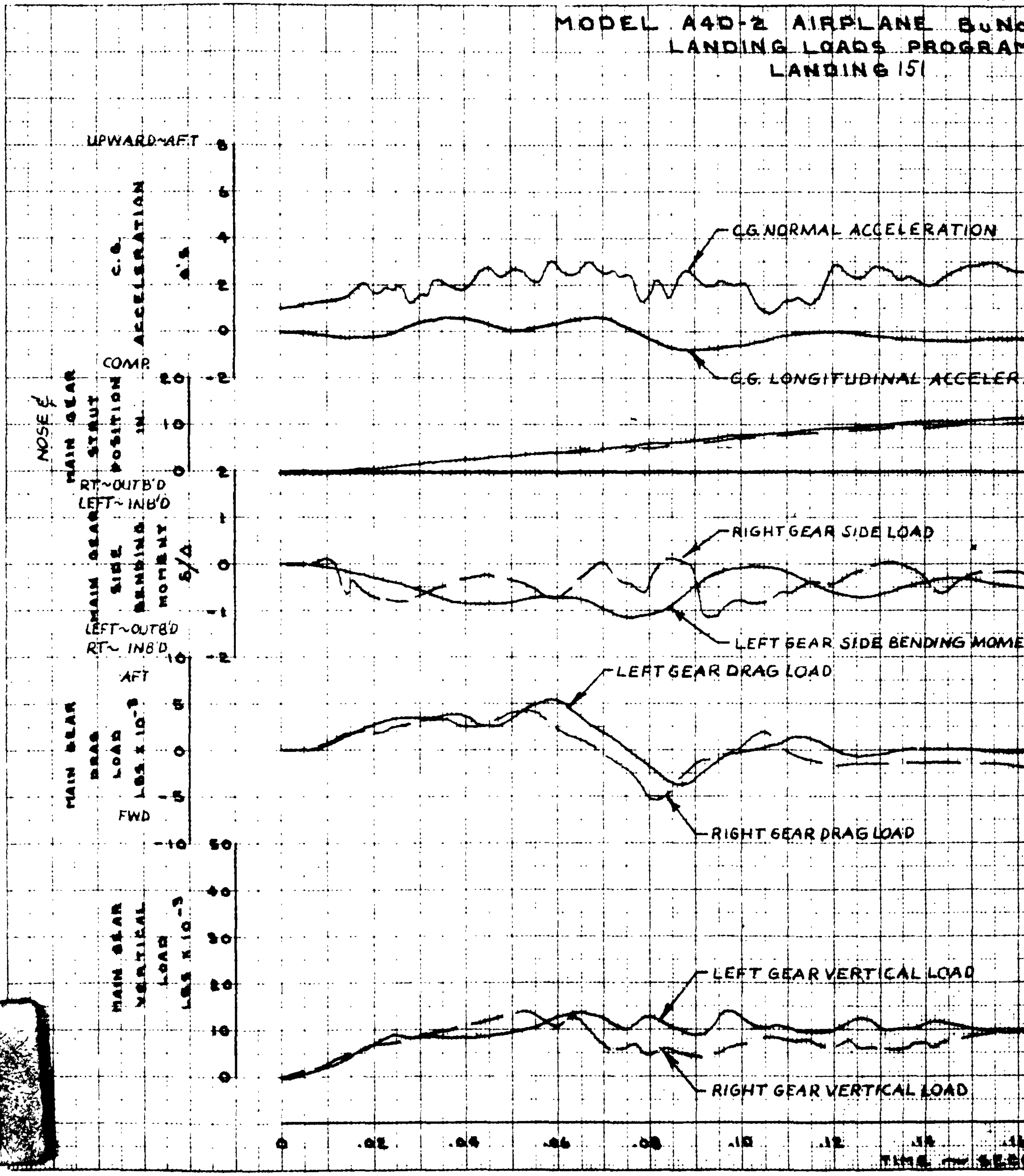
MODEL A4D-2 AIRPLANE BU. NO. 142089
LANDING LOADS PROGRAM
LANDING 150



2

FORM 25 DP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



K+E

57

1

PREPARED BY
CHECKED BY
DATE
TITLE

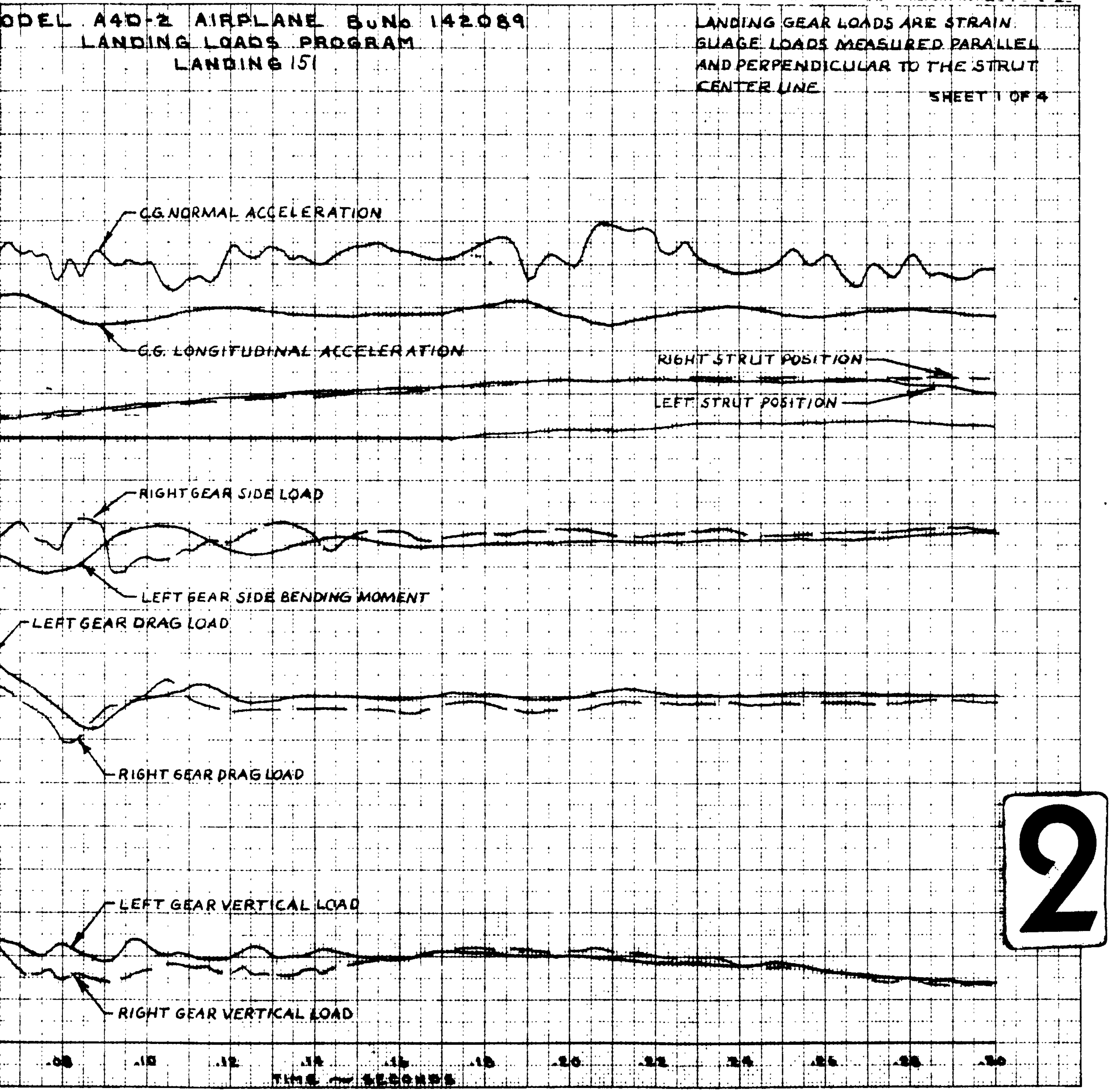
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE 8.4.42

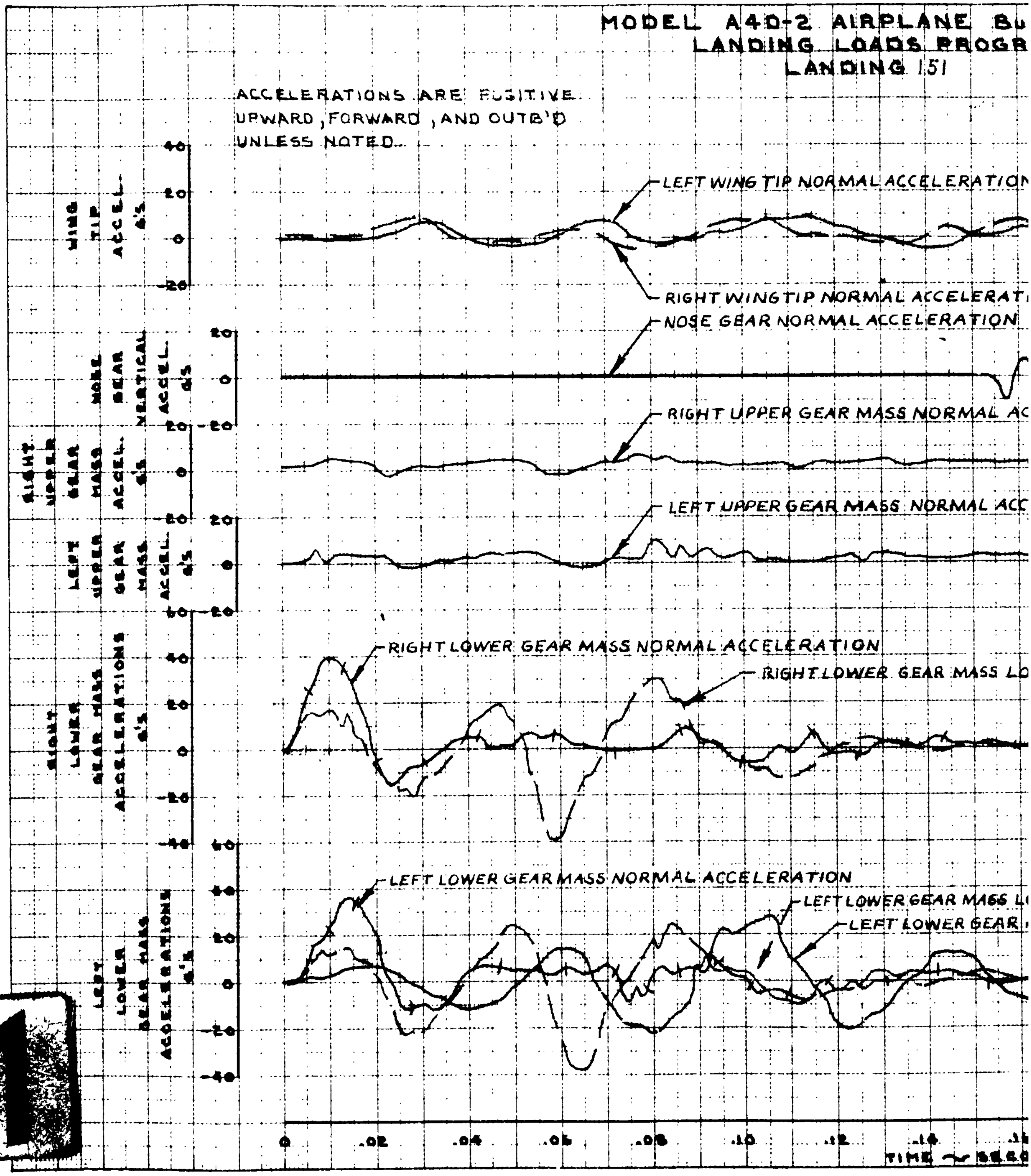
MODEL A4D-2

REPORT NO. DEV-3616



FORM 28 BP 1
(REV. 7-54)

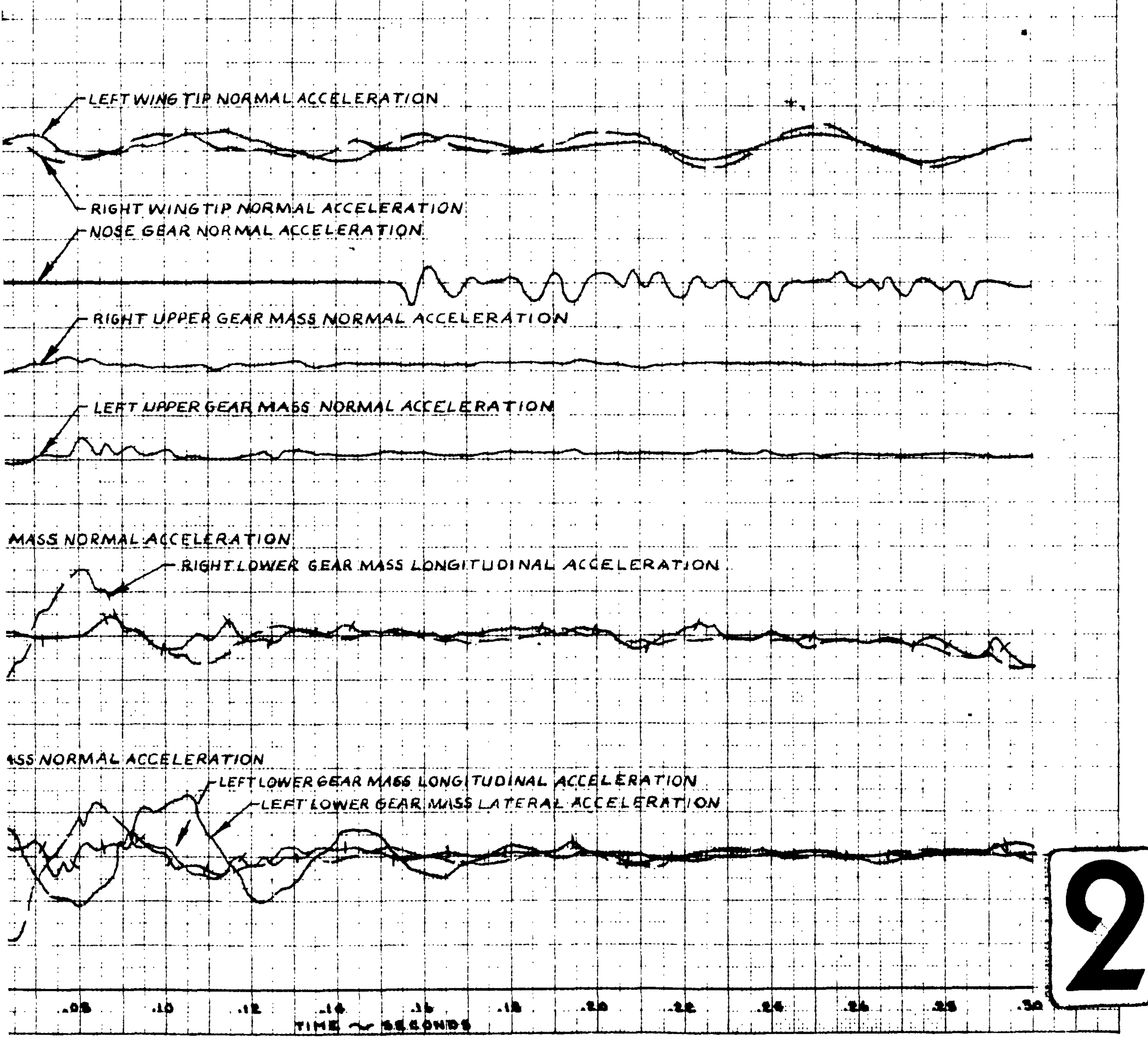
PREPARED BY:
CHECKED BY
DATE
TITLE



97

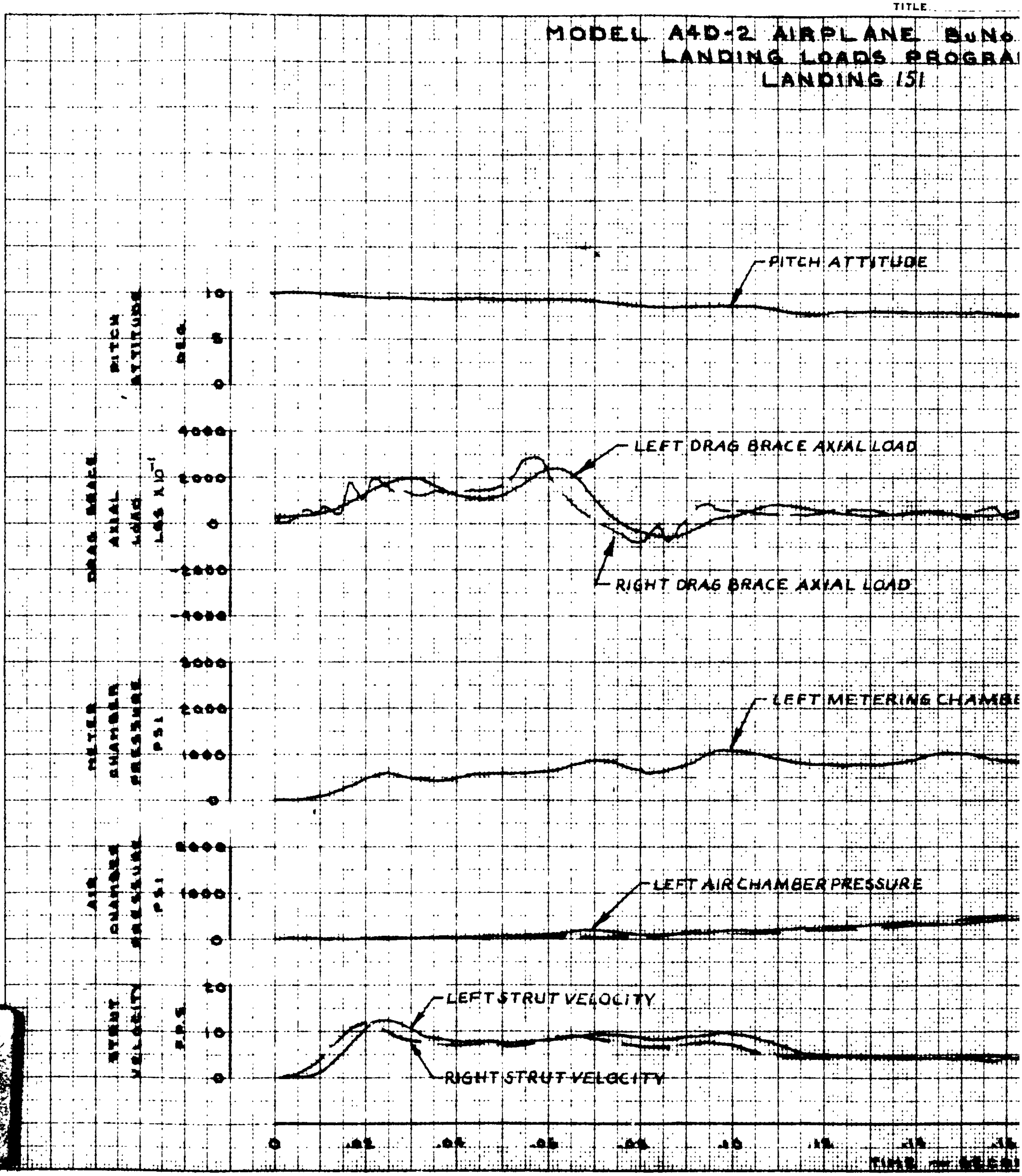
1

MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 151



FORM 25 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



K-E

L7

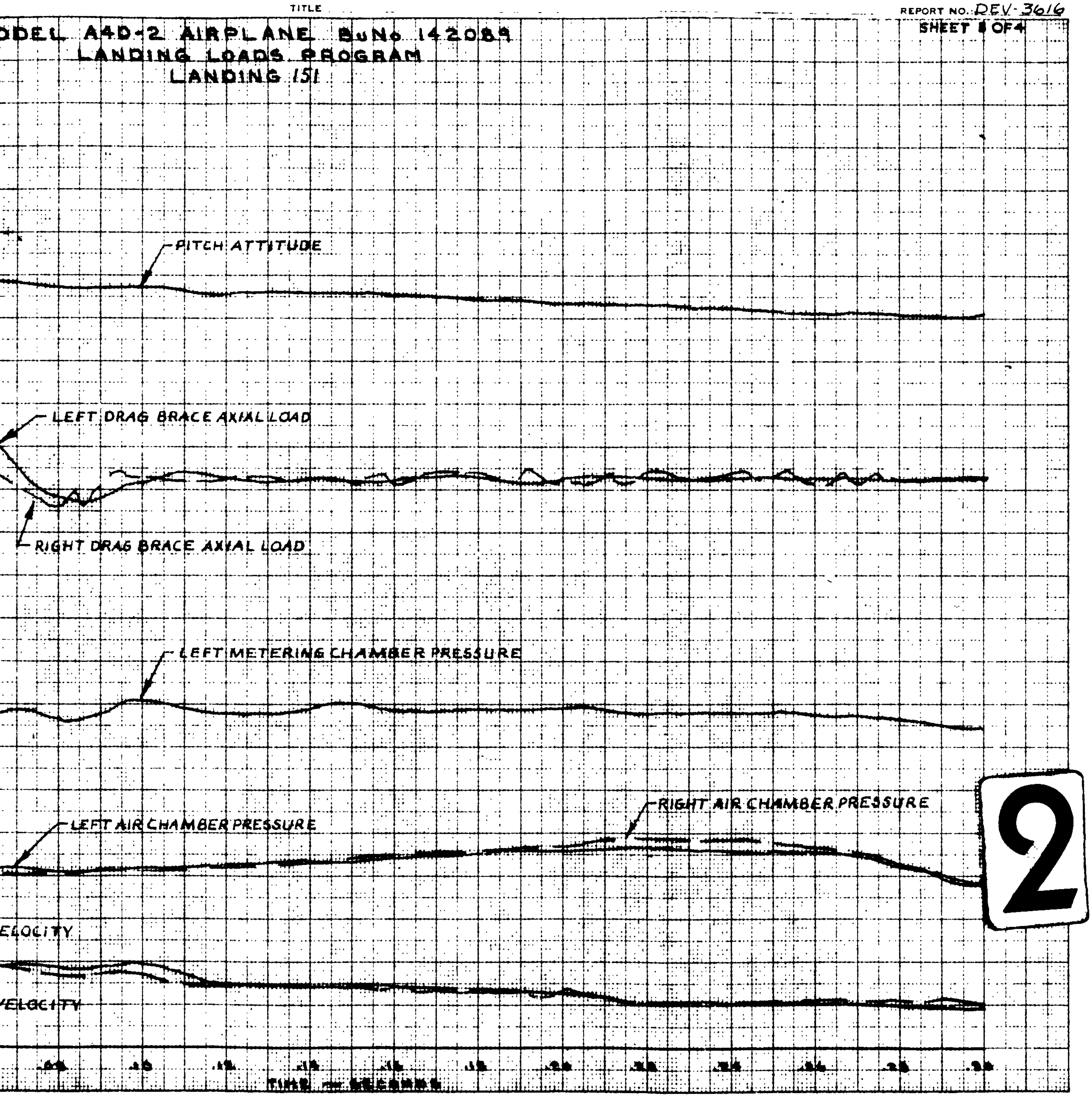
1

PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

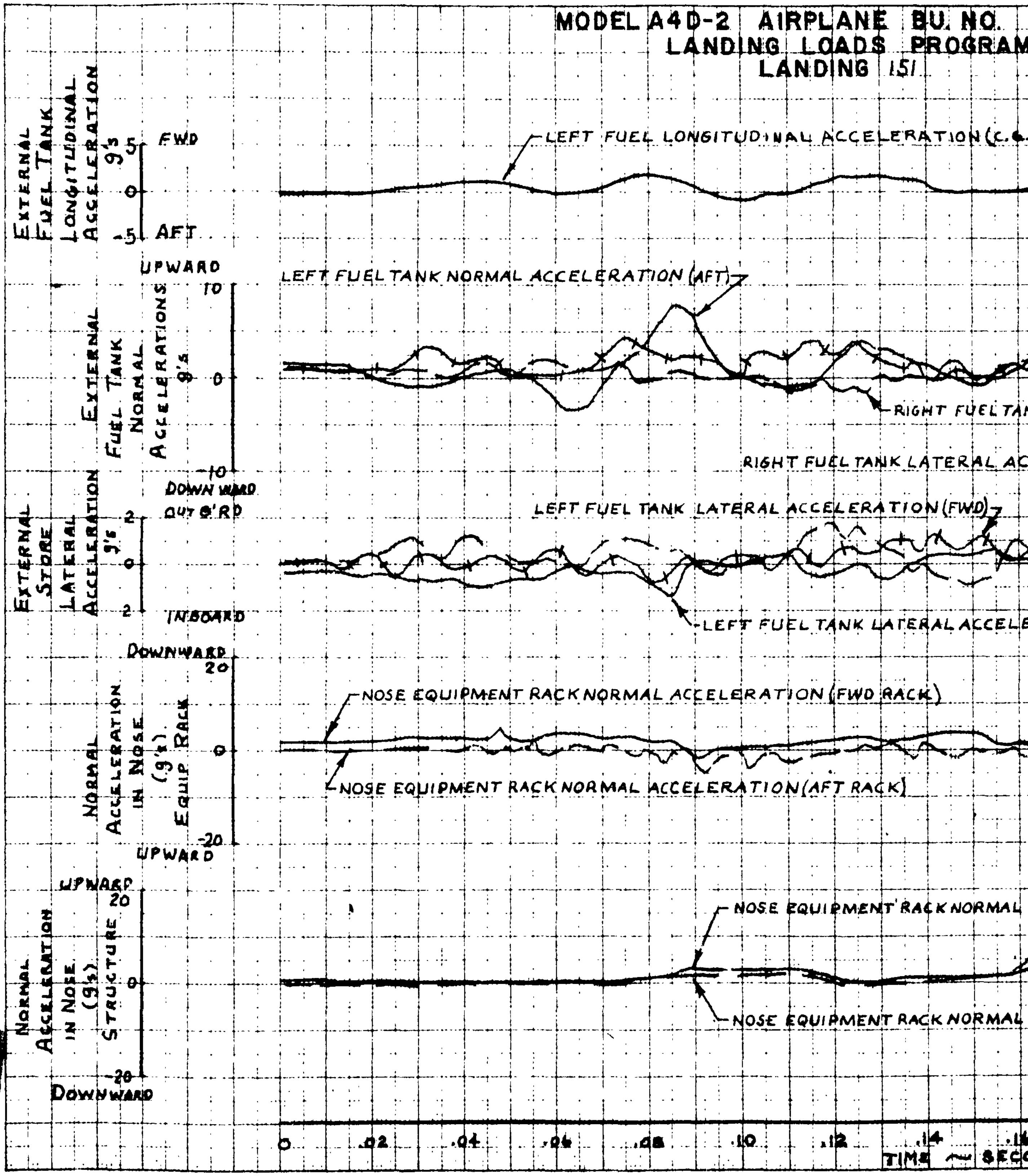
TESTING DIVISION

PAGE: 8.4.44
MODEL A4D-2
REPORT NO. DEV-3616
SHEET [illegible] OF 4



FORM 25 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



1

PREPARED BY

CHECKED BY

DATE

TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

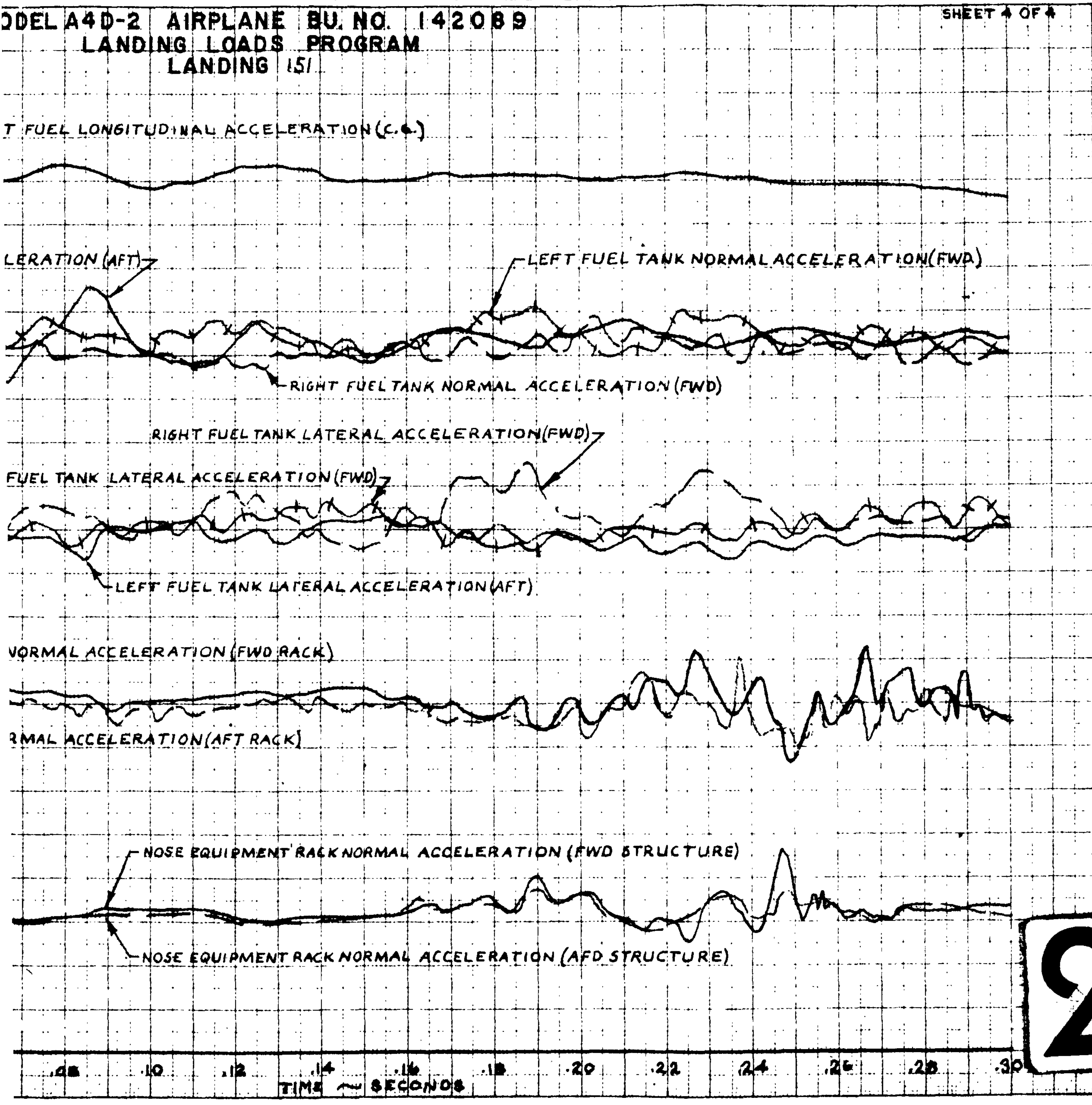
TESTING DIVISION

PAGE: 8.4.45

MODEL: A4D-2

REPORT NO. DEV-3616

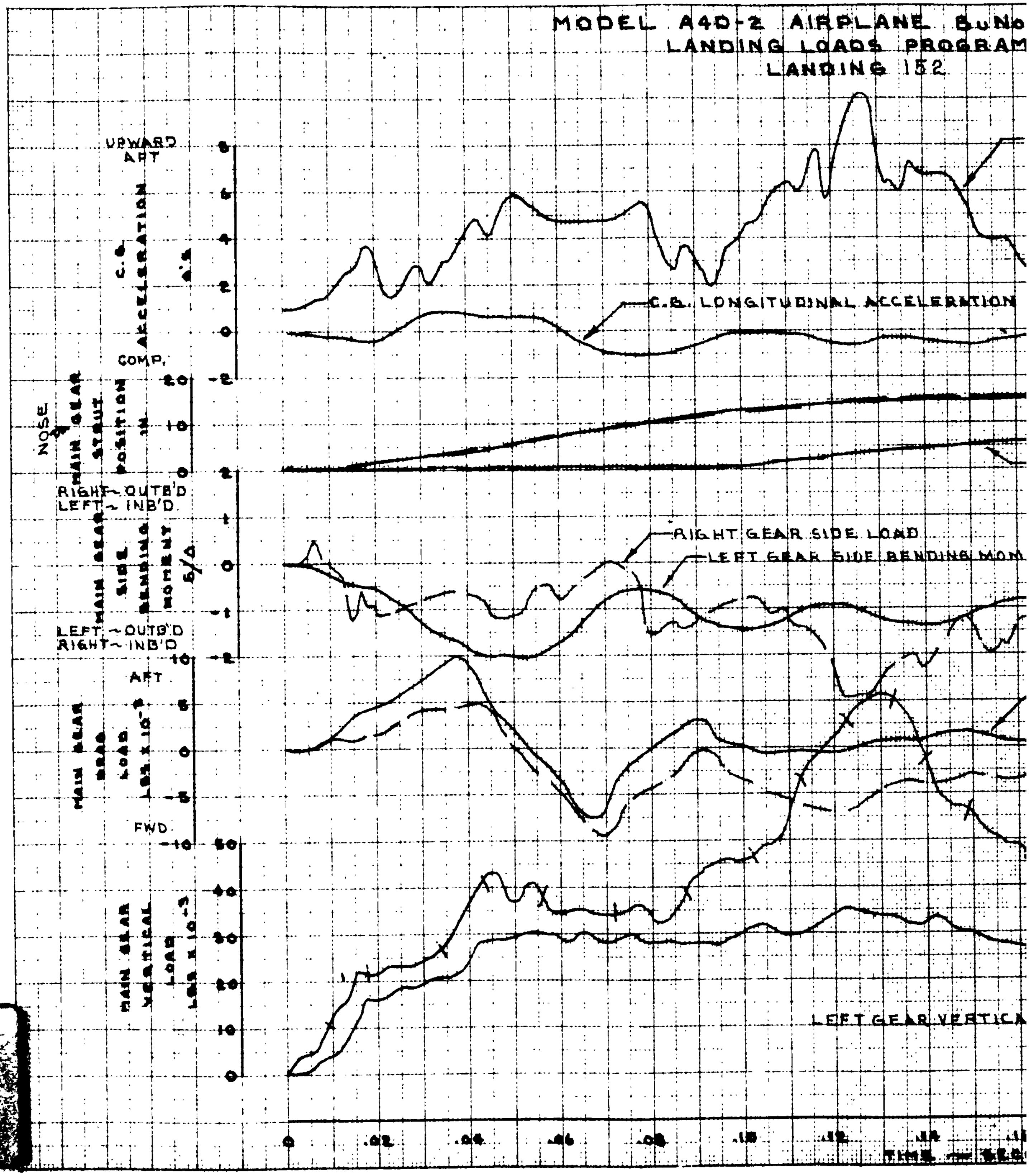
SHEET 4 OF 4



2

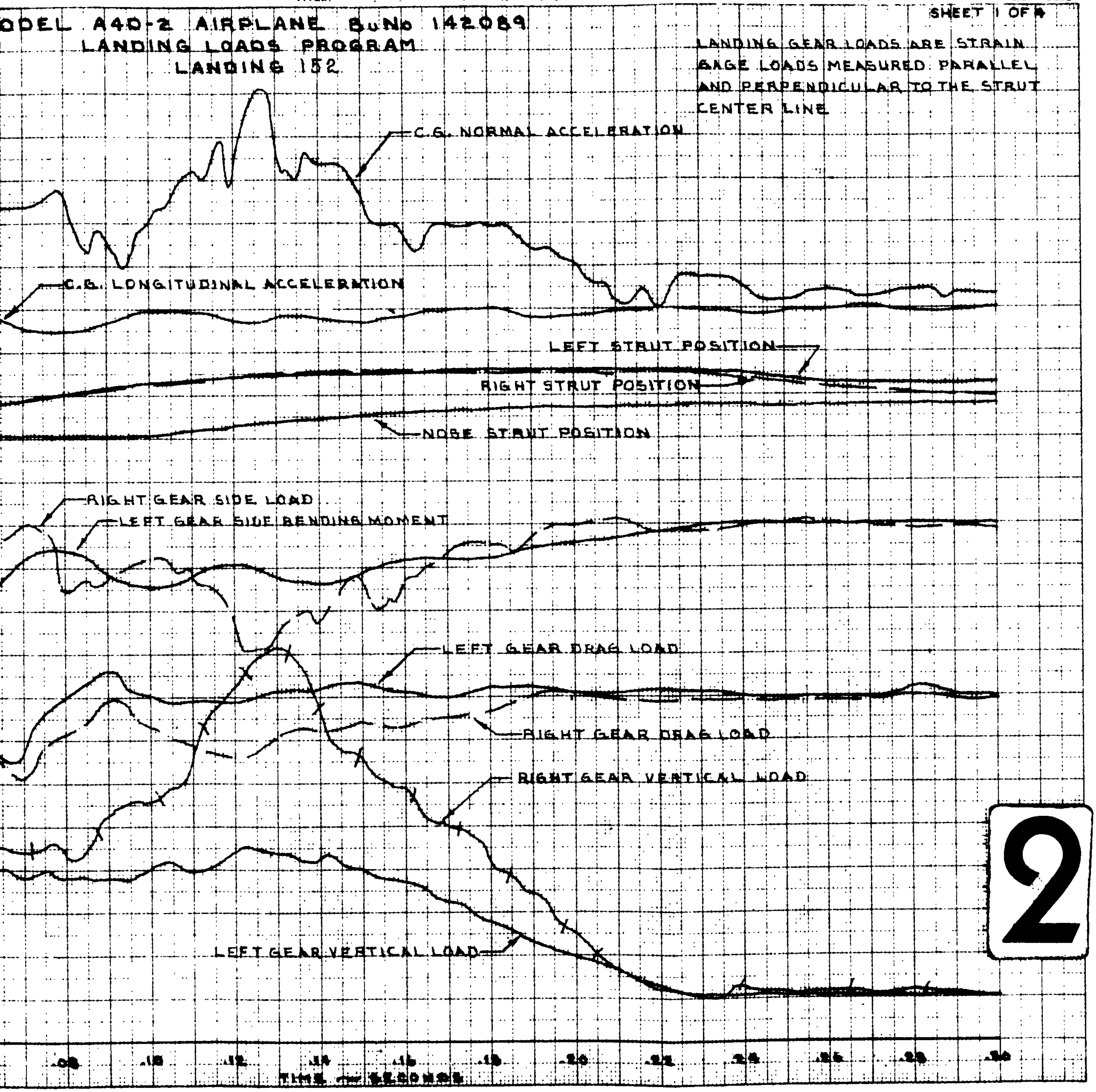
FORM 28 DP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE
TITLE



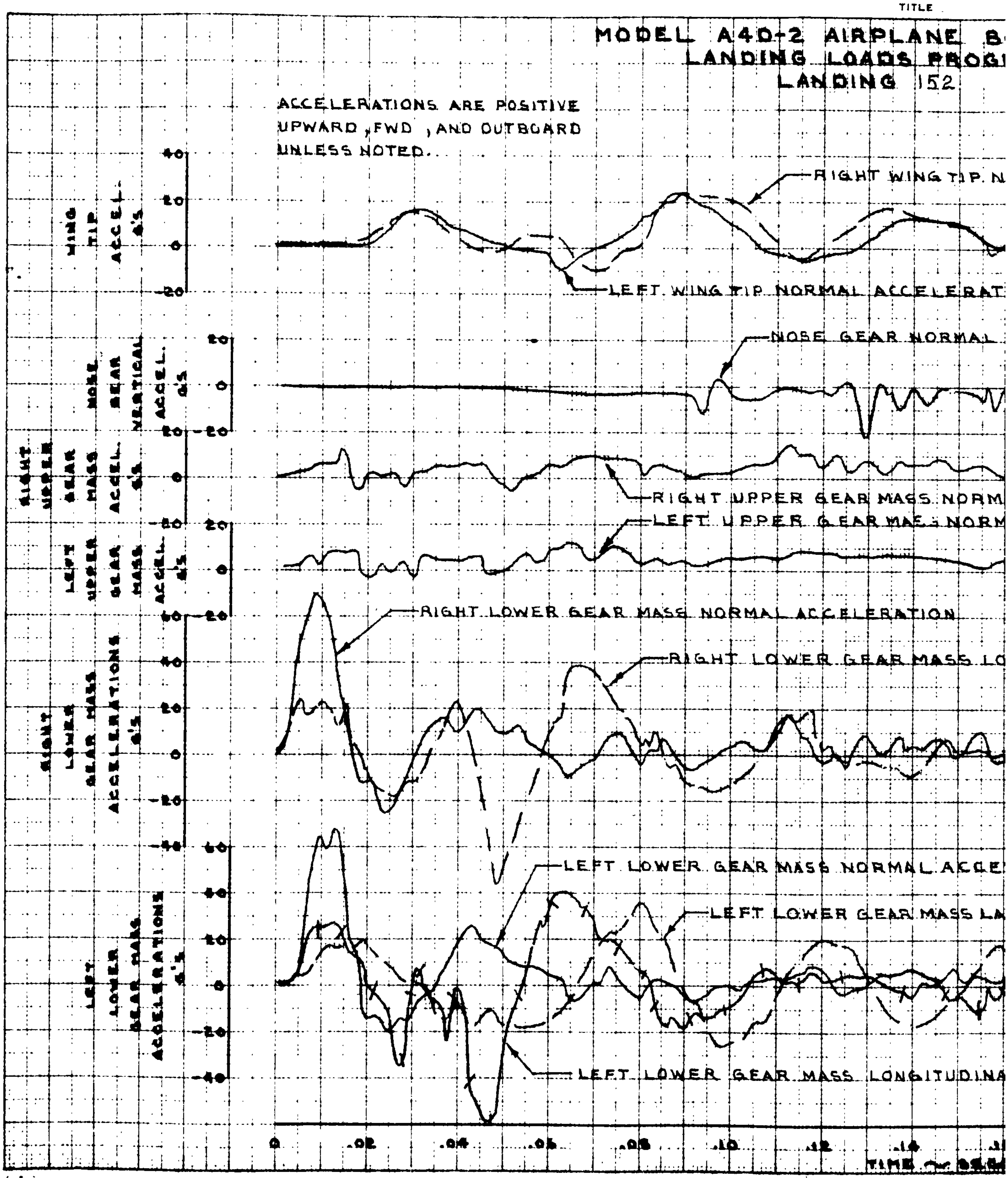
67

1


SHEET 1 OF 4
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 152
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE
C.G. NORMAL ACCELERATION
C.G. LONGITUDINAL ACCELERATION
LEFT STRUT POSITION
RIGHT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
RIGHT GEAR VERTICAL LOAD
LEFT GEAR VERTICAL LOAD
2

FORM 28 GP 1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



PREPARED BY:
CHECKED BY
DATE
TITLE

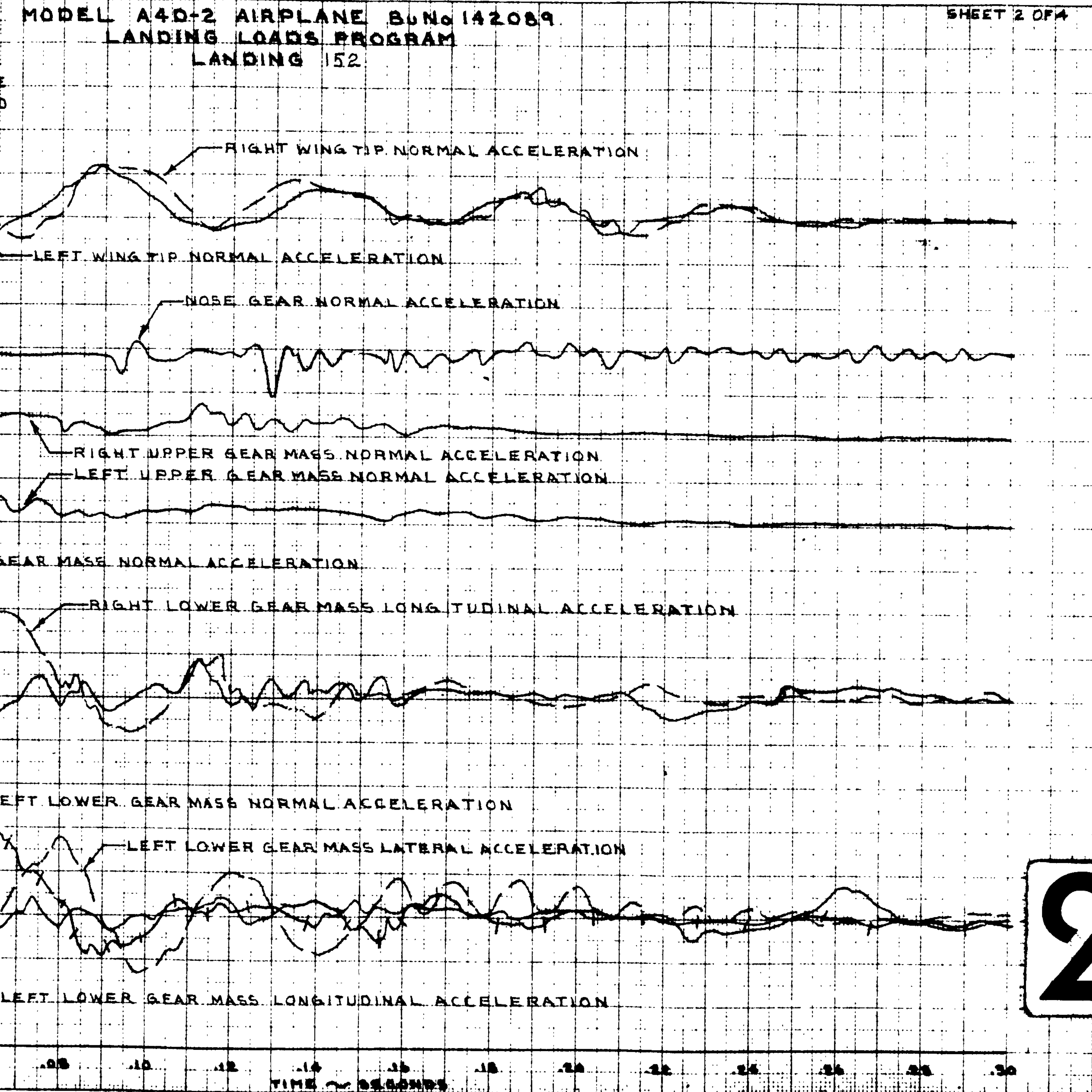
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

MODEL: A4D-2

REPORT NO.: DEV-3616

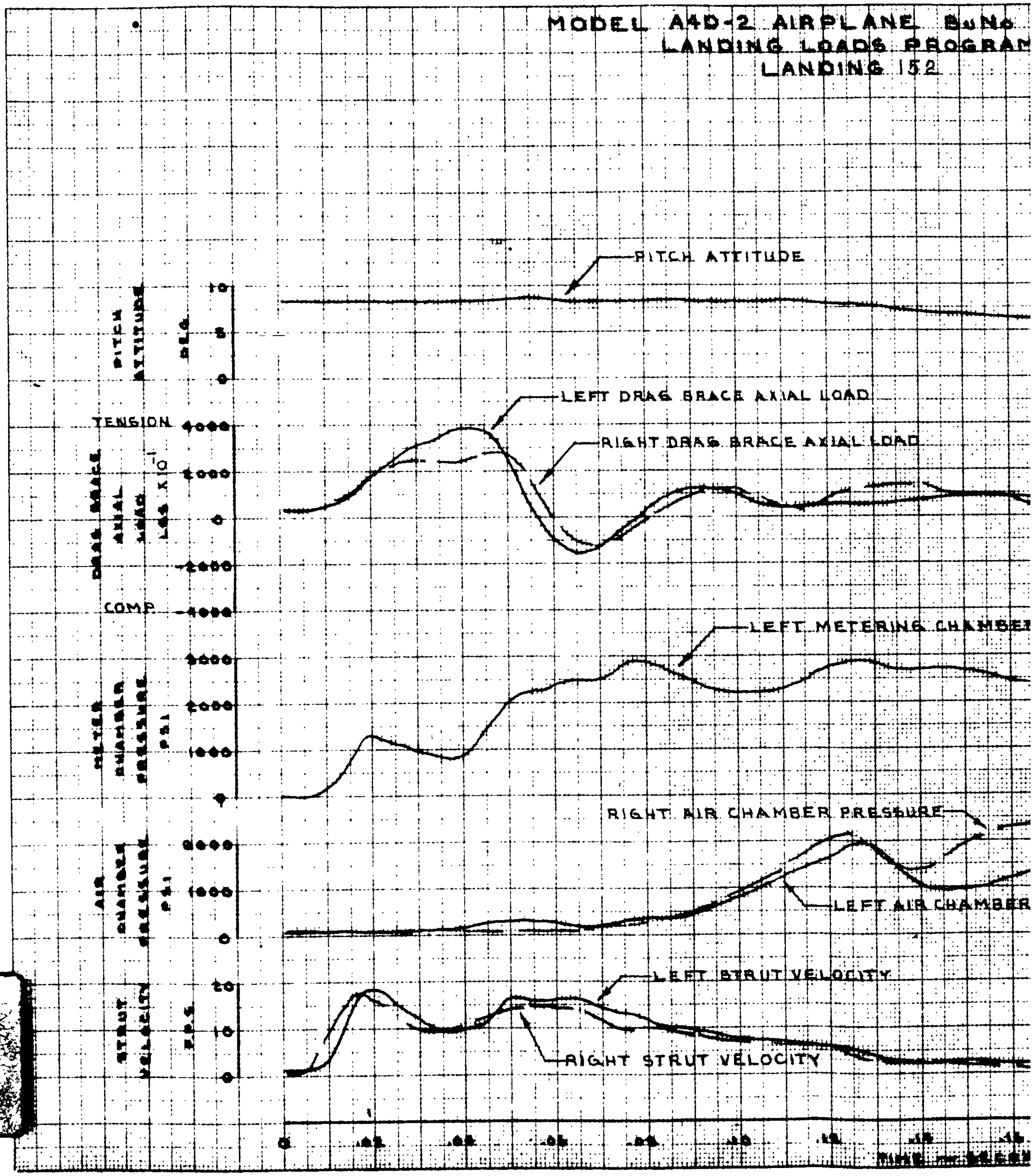
SHEET 2 OF 4



2

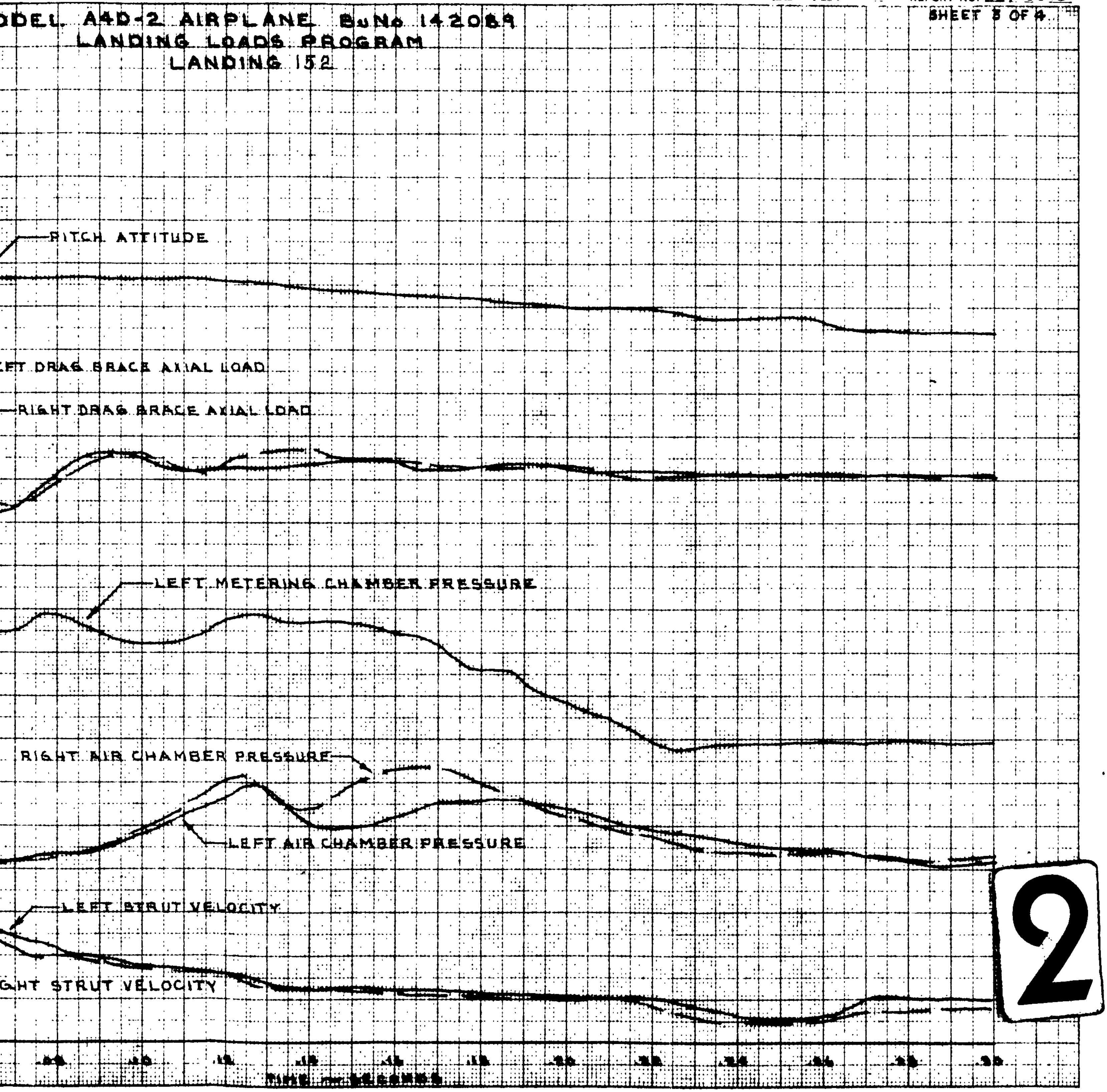
FORM 25 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



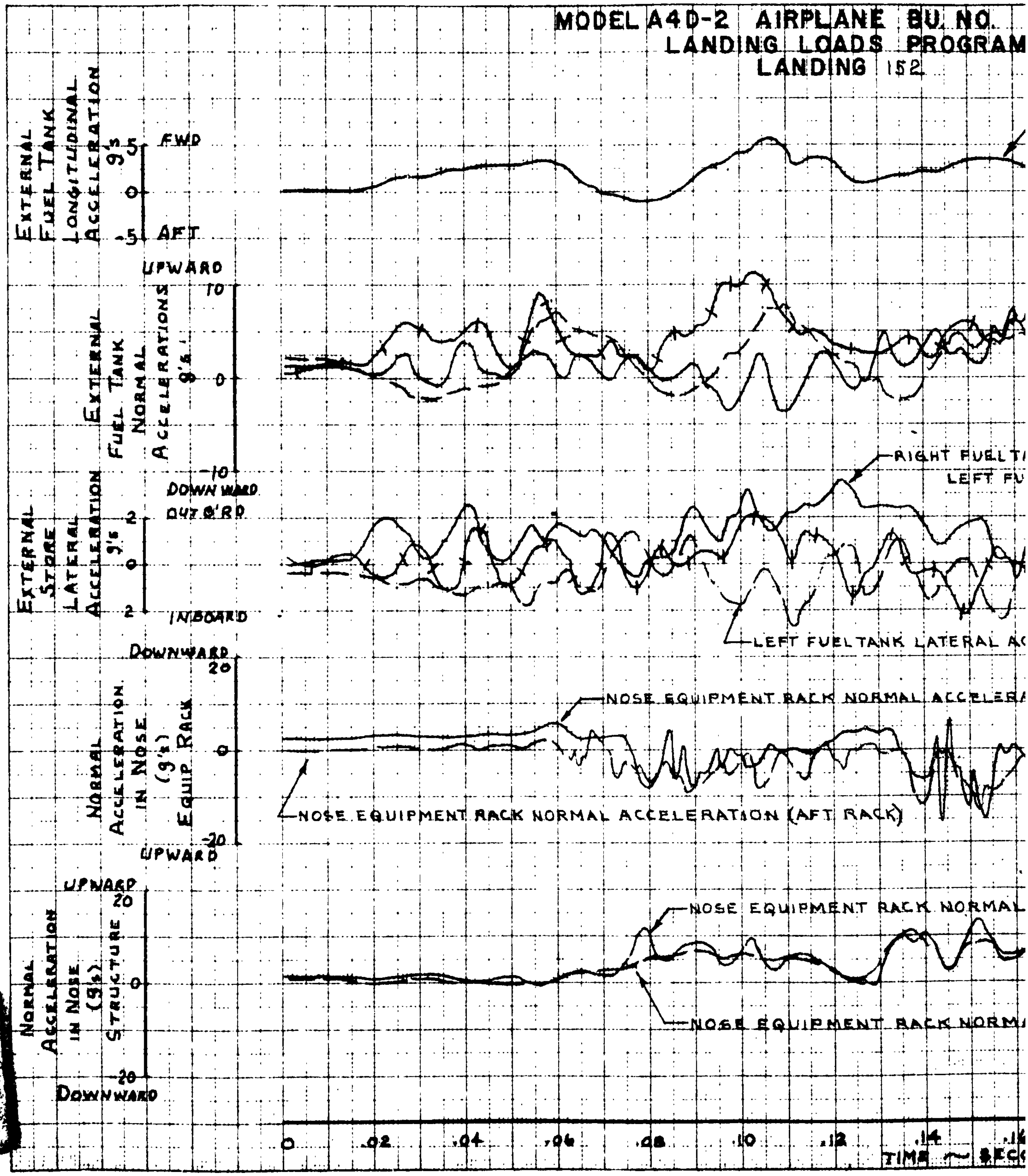
1L

1


SHEET 3 OF 4
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 152
PITCH ATTITUDE
LEFT DRAG BRACE AXIAL LOAD
RIGHT DRAG BRACE AXIAL LOAD
LEFT METERING CHAMBER PRESSURE
RIGHT AIR CHAMBER PRESSURE
LEFT AIR CHAMBER PRESSURE
LEFT STRUT VELOCITY
RIGHT STRUT VELOCITY
2

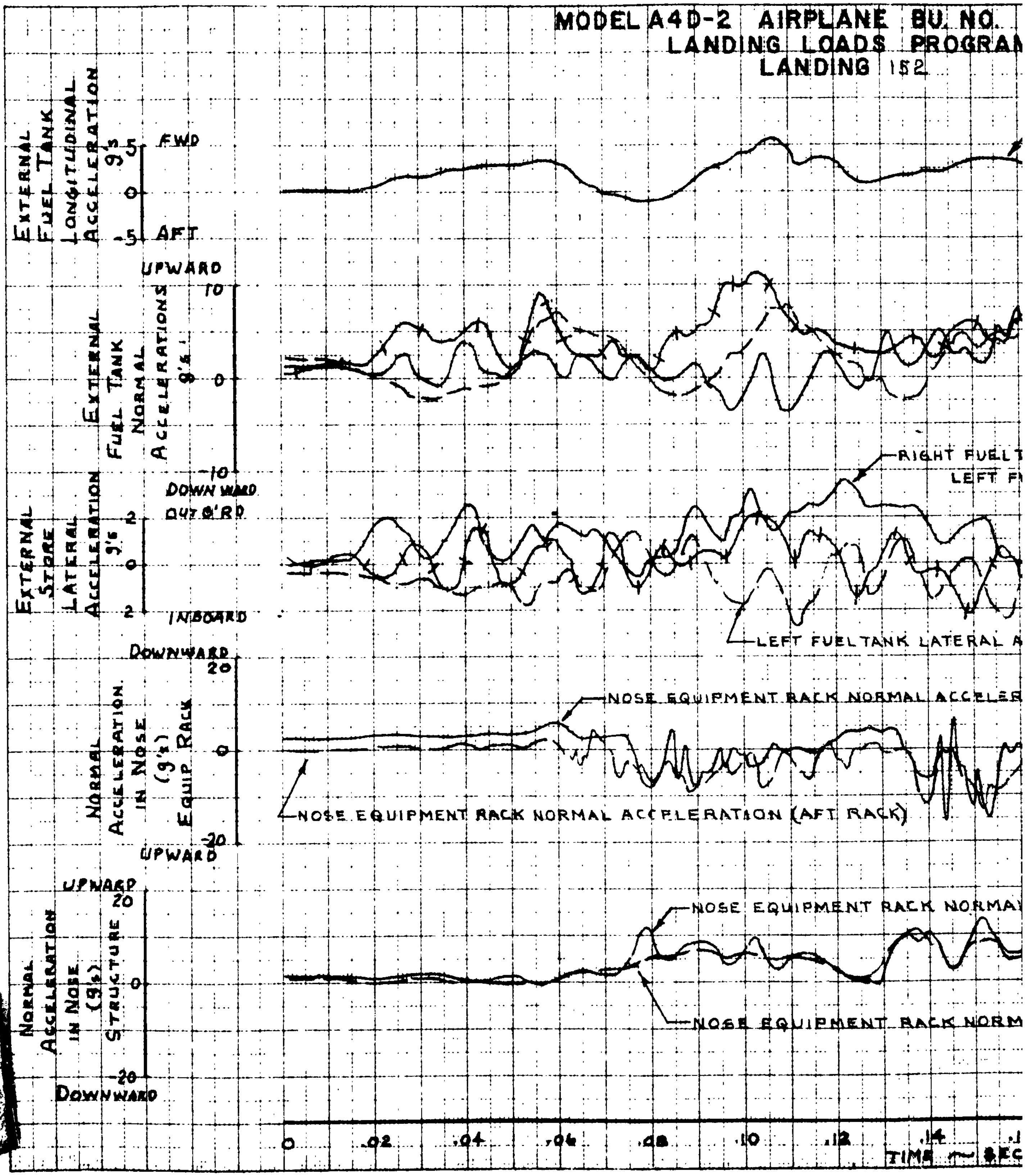
FORM 25 RP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



FORM 25 BP-1 (REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE

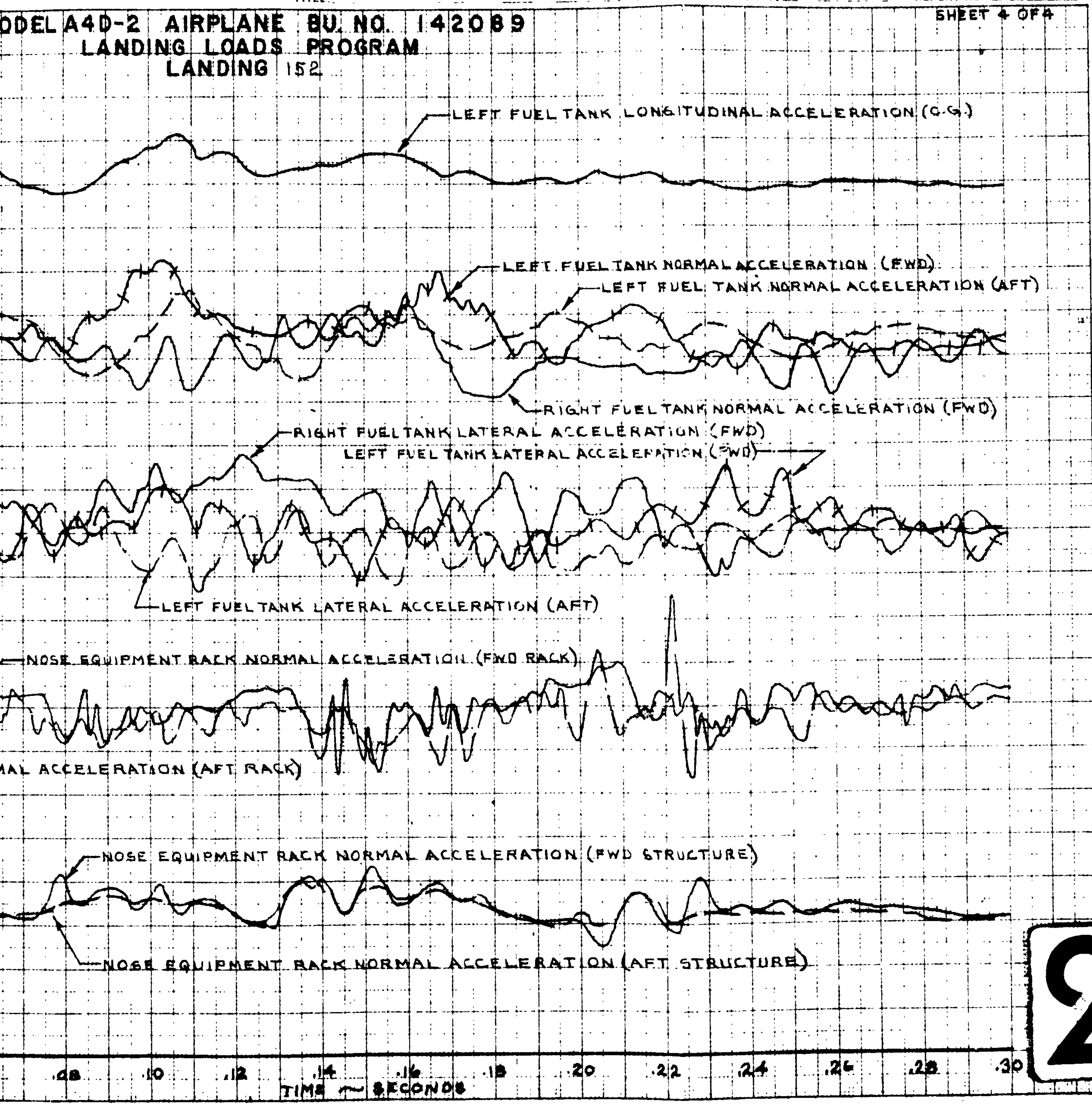


72

1

PREPARED BY
CHECKED BY
DATE
TITLE

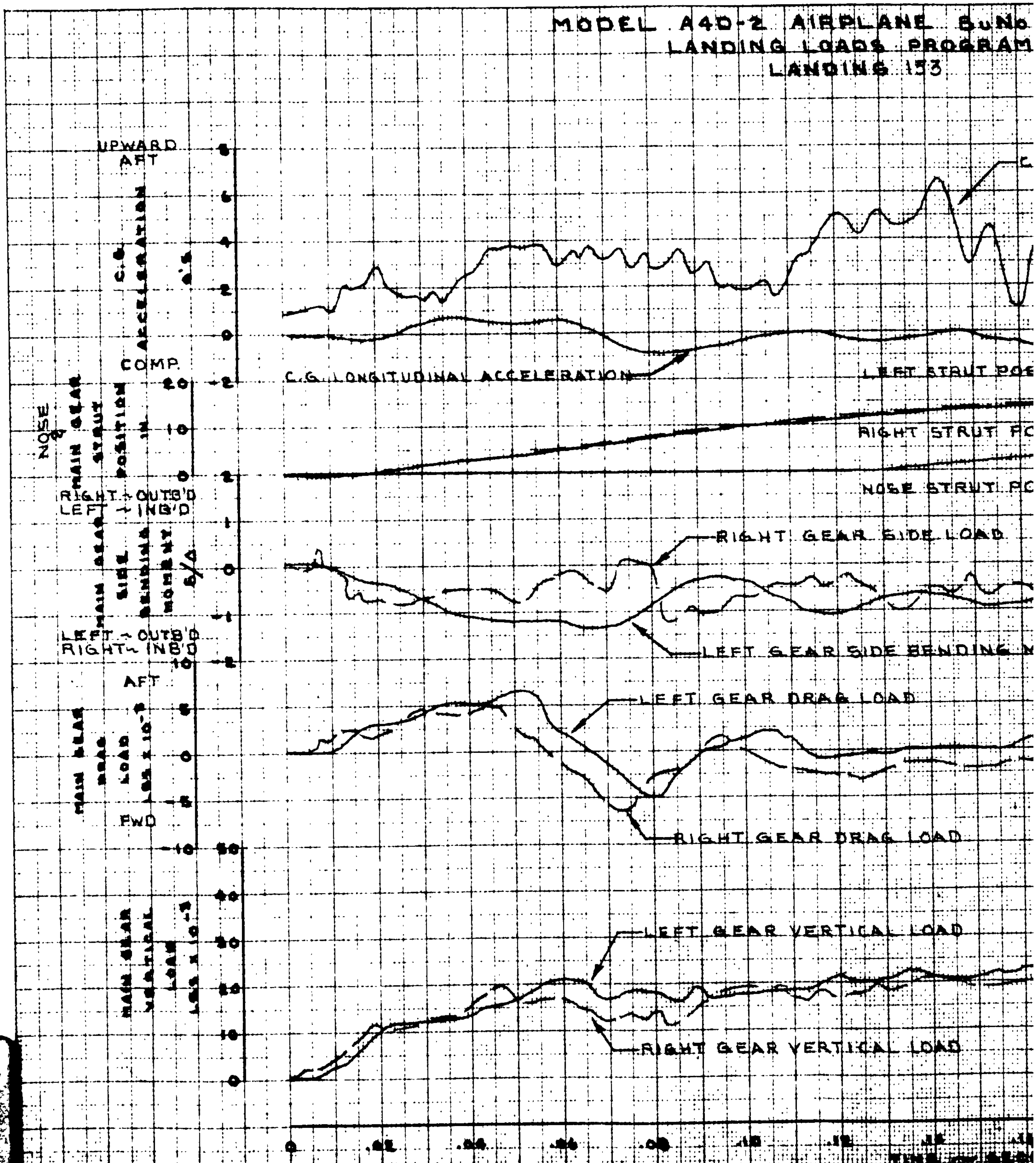
DOUGLAS AIRCRAFT COMPANY, INC.
TESTING DIVISION



2

FORM 25 GP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE
TITLE



73

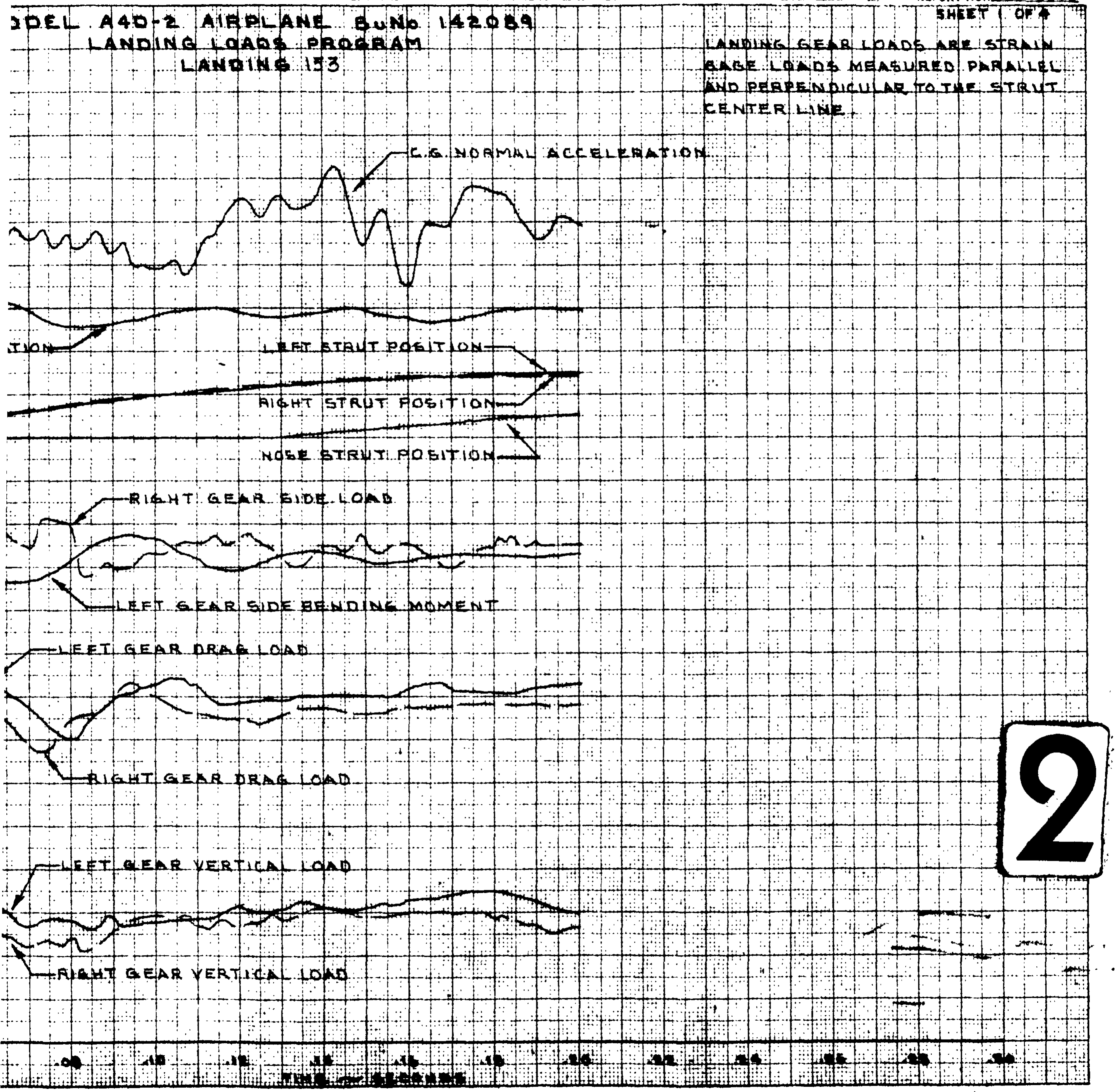
K+E ALBANENE 196L TRACING PAPER

PREPARED BY:
CHECKED BY:
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

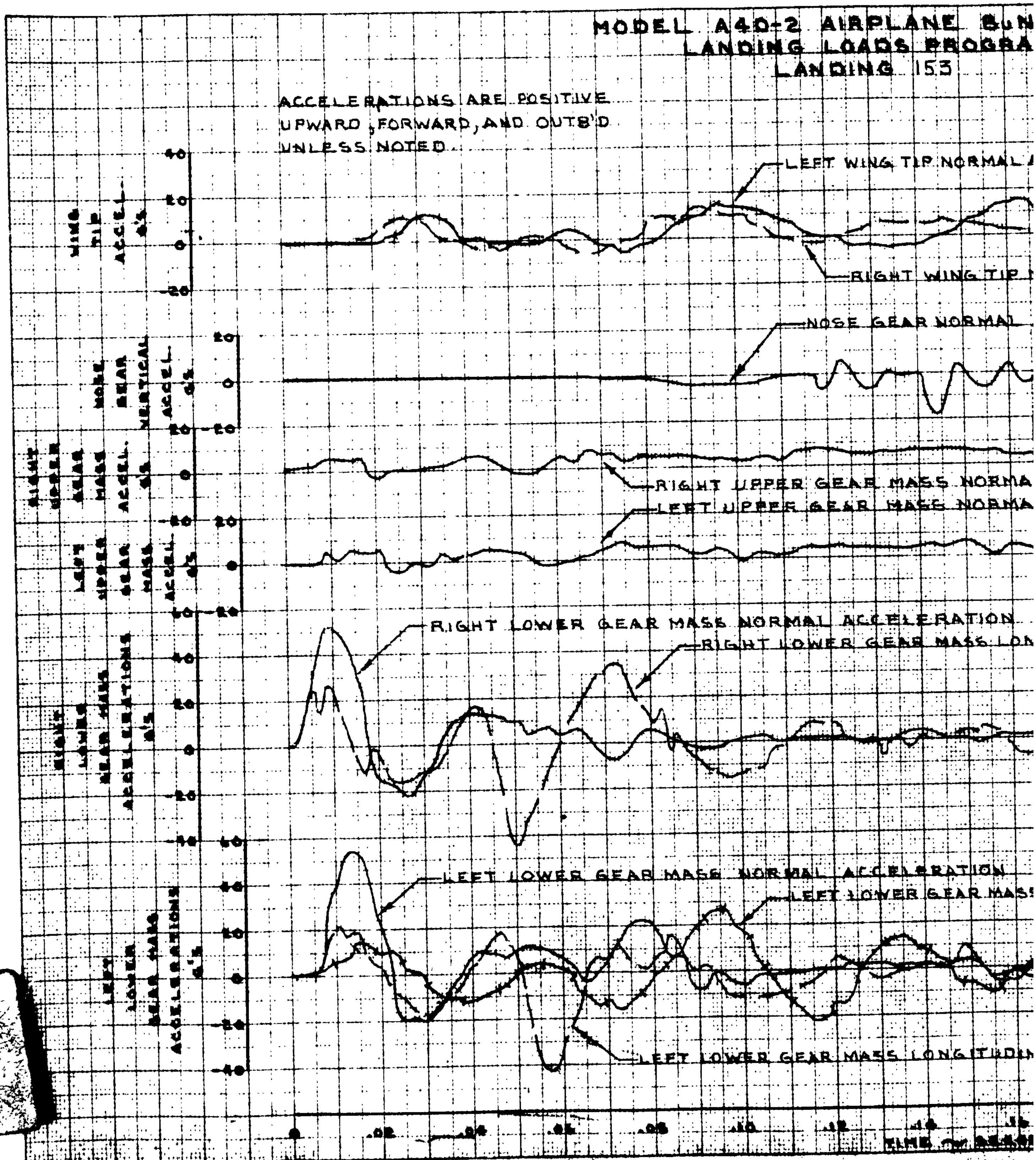
TESTING DIVISION

PAGE: 8.459
MODEL: A4D-2
REPORT NO. DEV-3616



FORM 25 BP-1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE



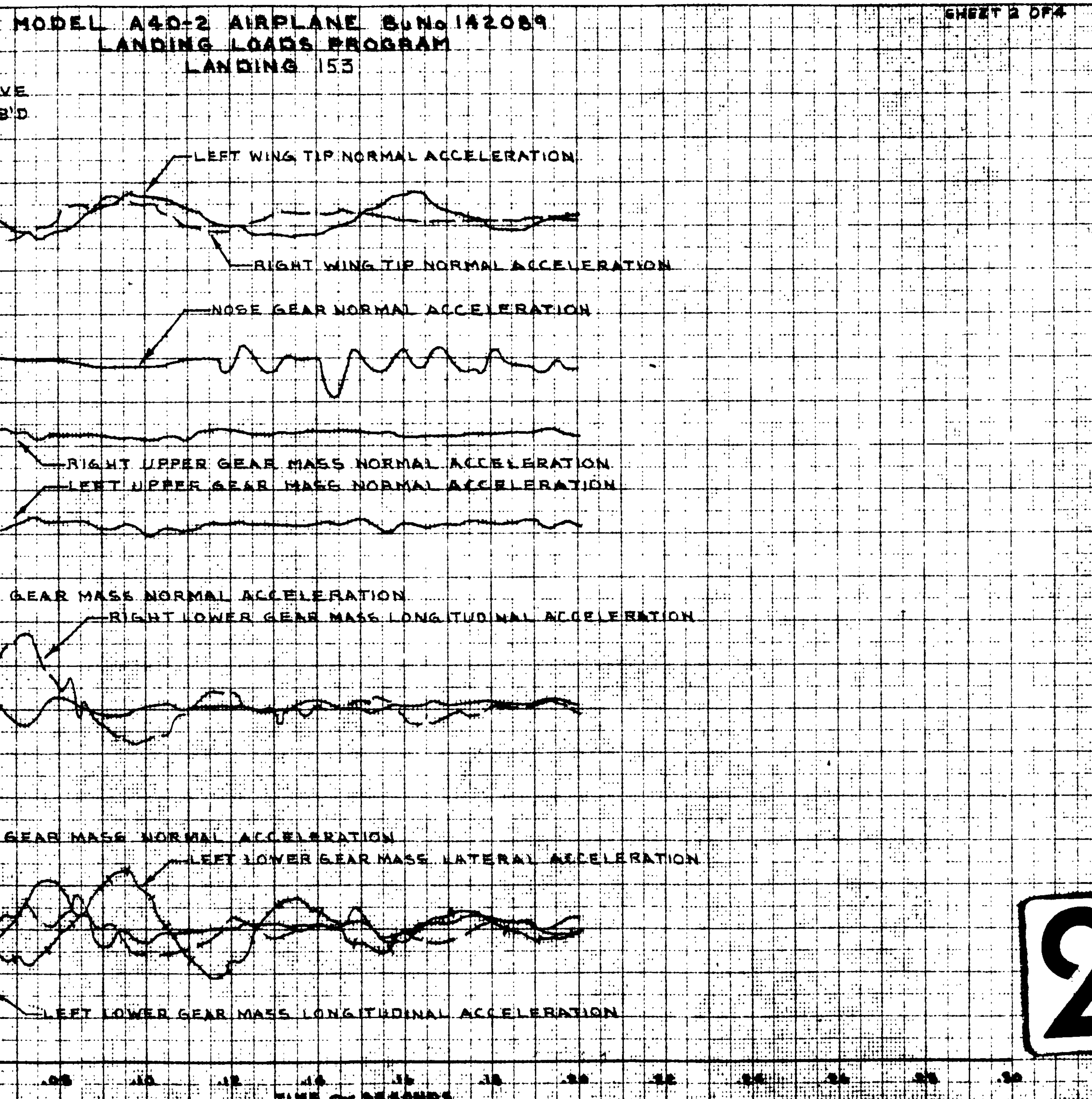
74

K+E

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

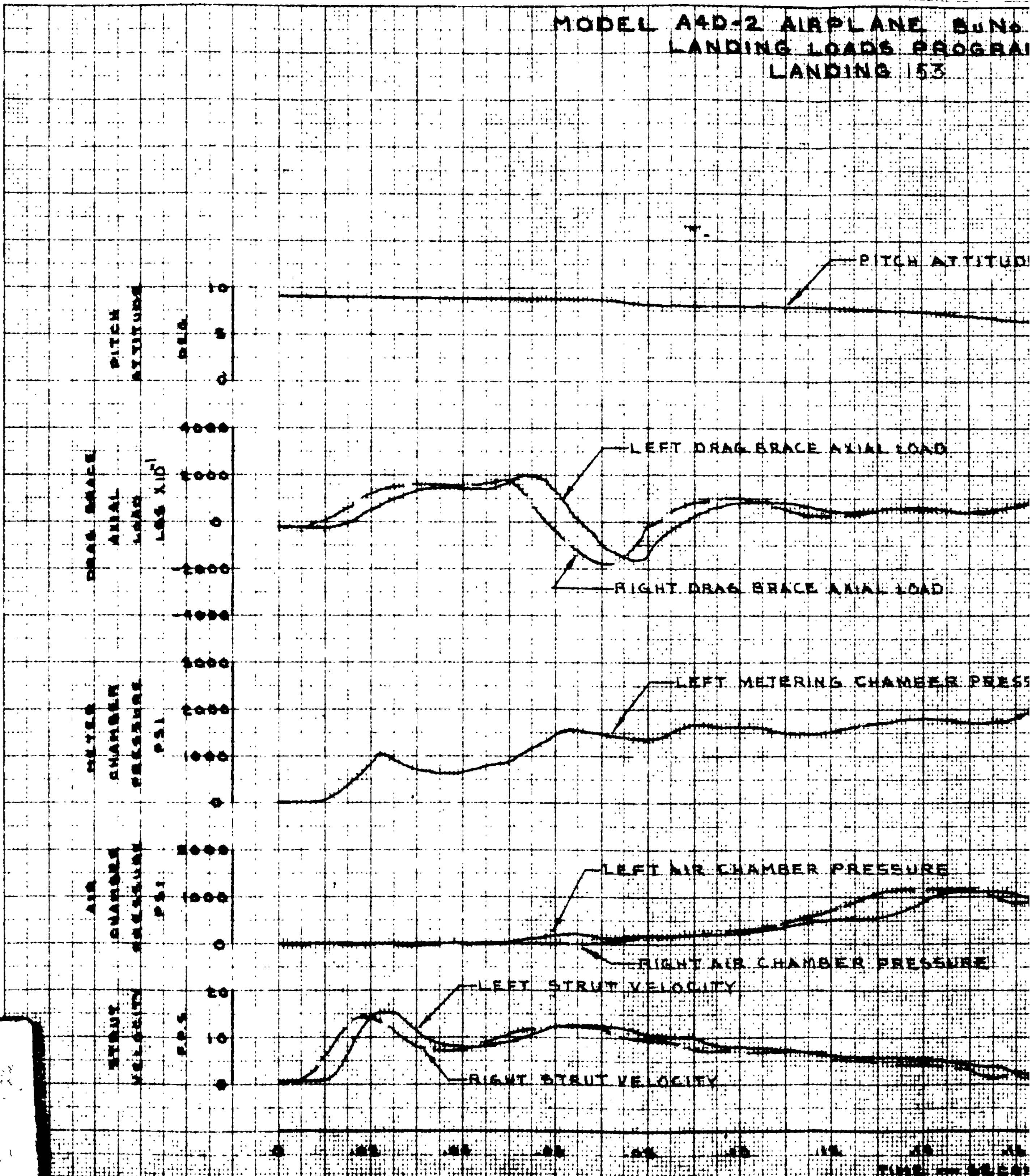
TESTING DIVISION



2

FORM 25 BP-1
(REV. 7-64)

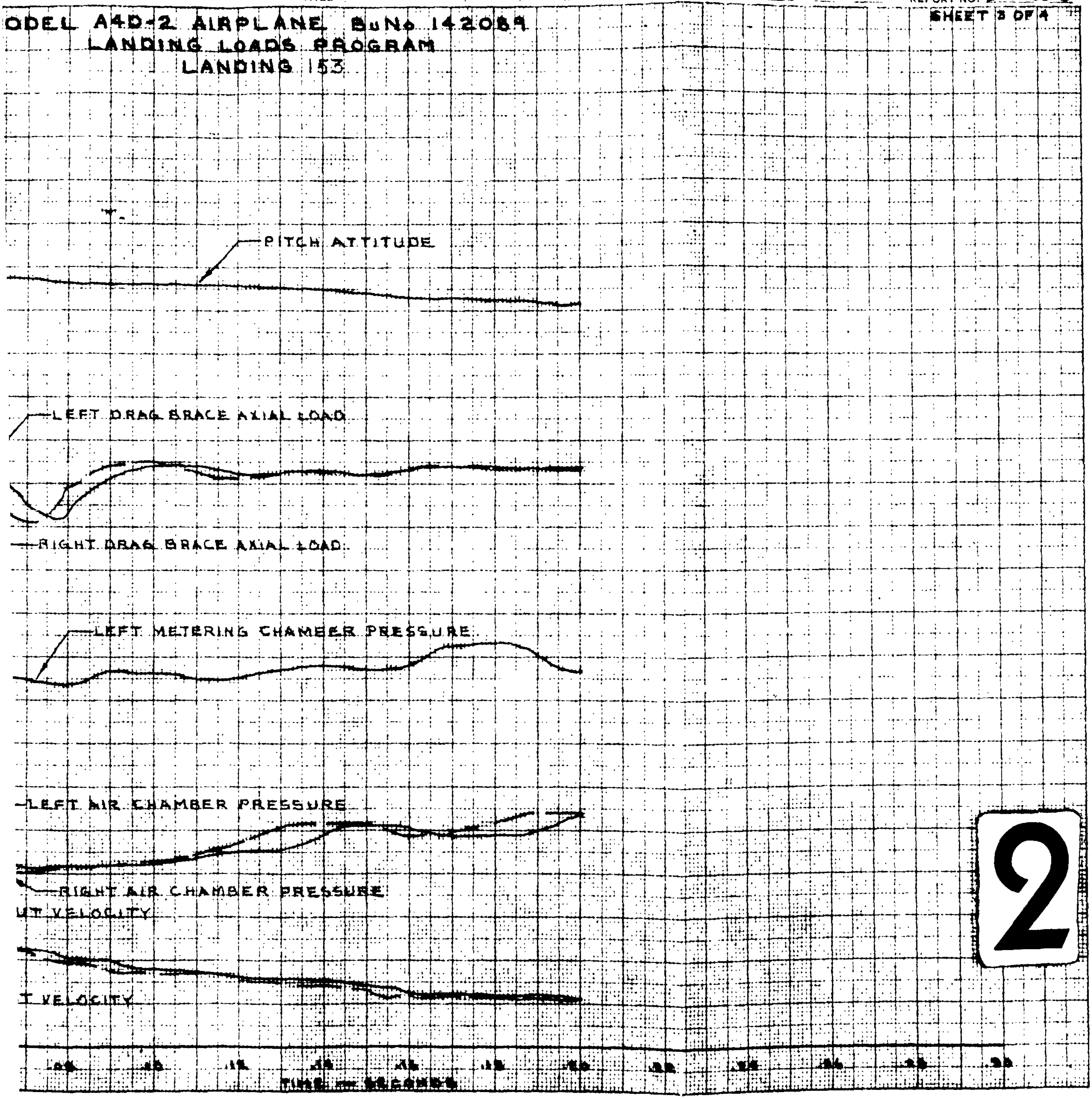
PREPARED BY:
CHECKED BY
DATE
TITLE:



1

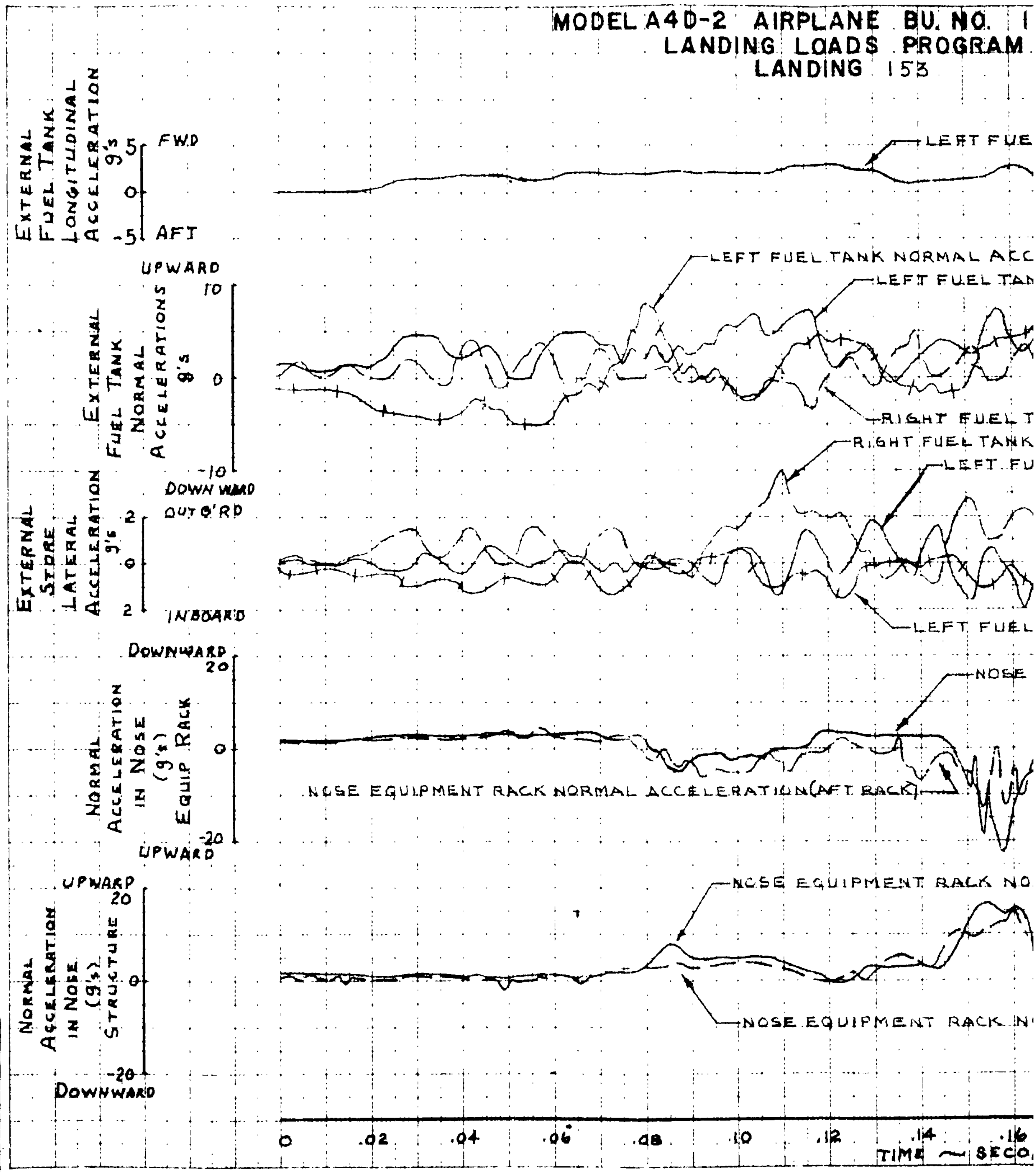
52

PREPARED BY	DOUGLAS AIRCRAFT COMPANY, INC.		PAGE: 8.4.52
CHECKED BY	TESTING	DIVISION	MODEL A4D-2
DATE			REPORT NO. DEV-3616
TITLE			



FORM ... (REV 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



1

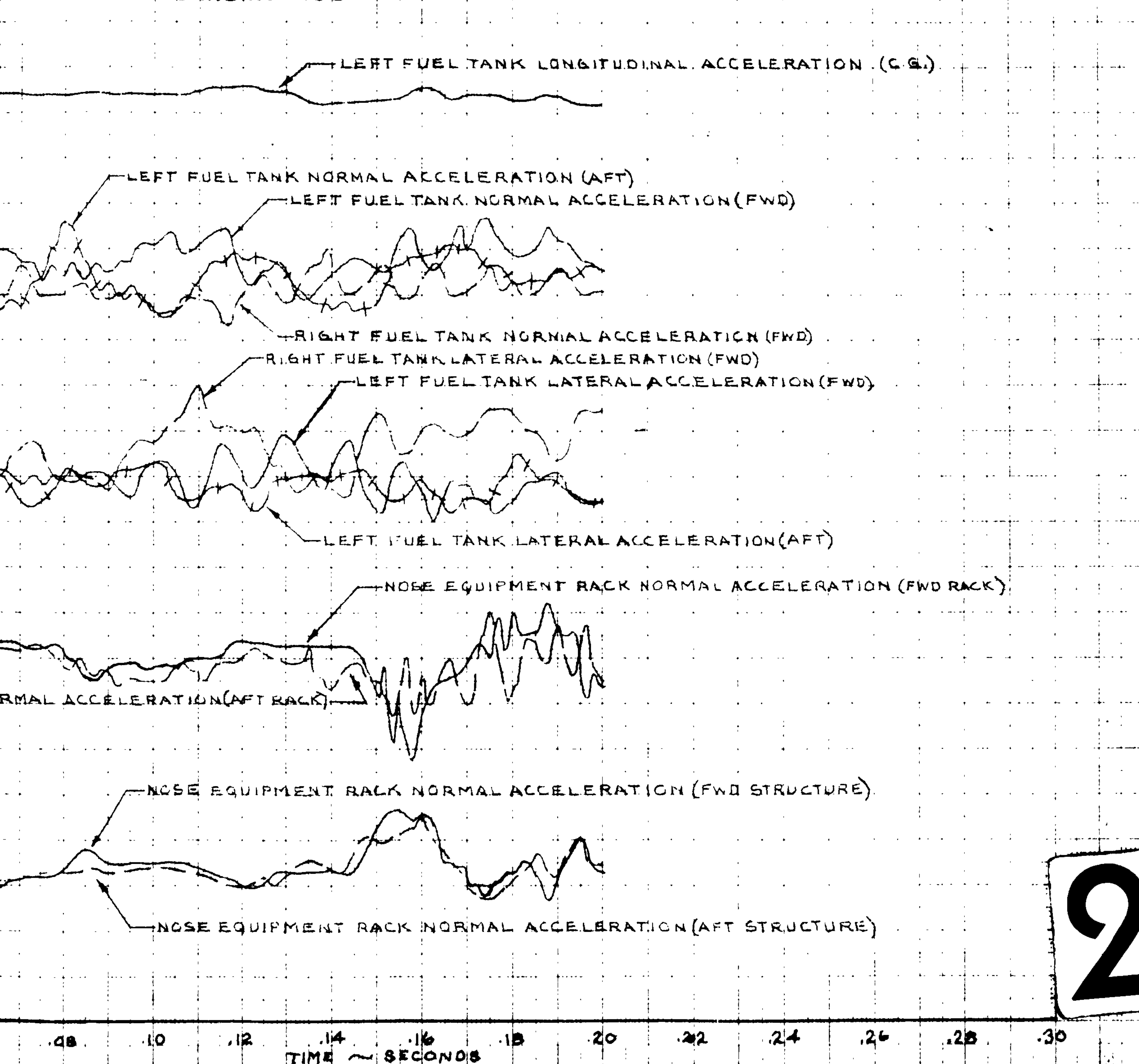
PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE 8.4.53
MODEL A4D-2
REPORT NO DEV-3616

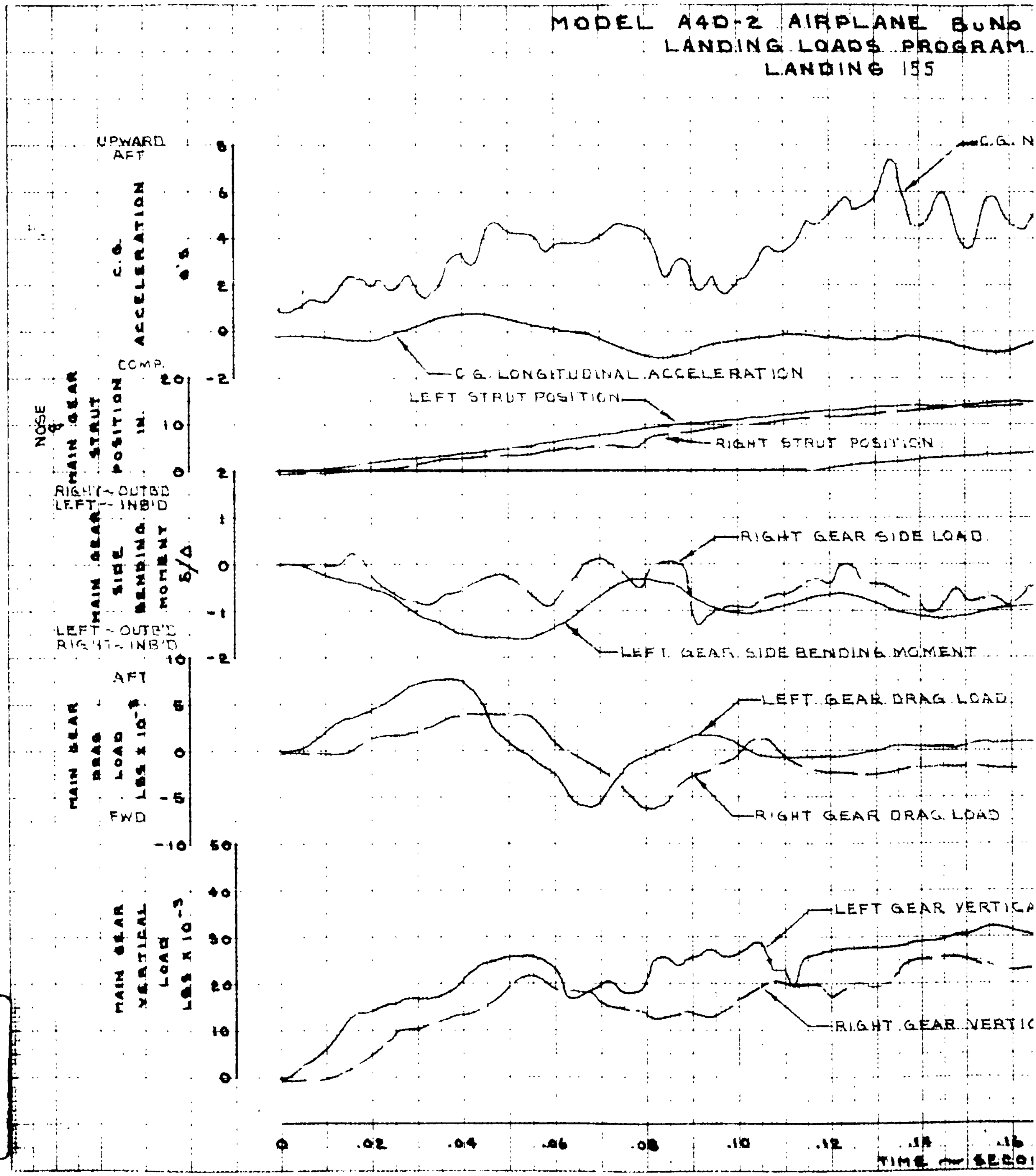
ODEL A4D-2 AIRPLANE BU. NO. 142089
LANDING LOADS PROGRAM
LANDING 153



2

FORM ... REV ...

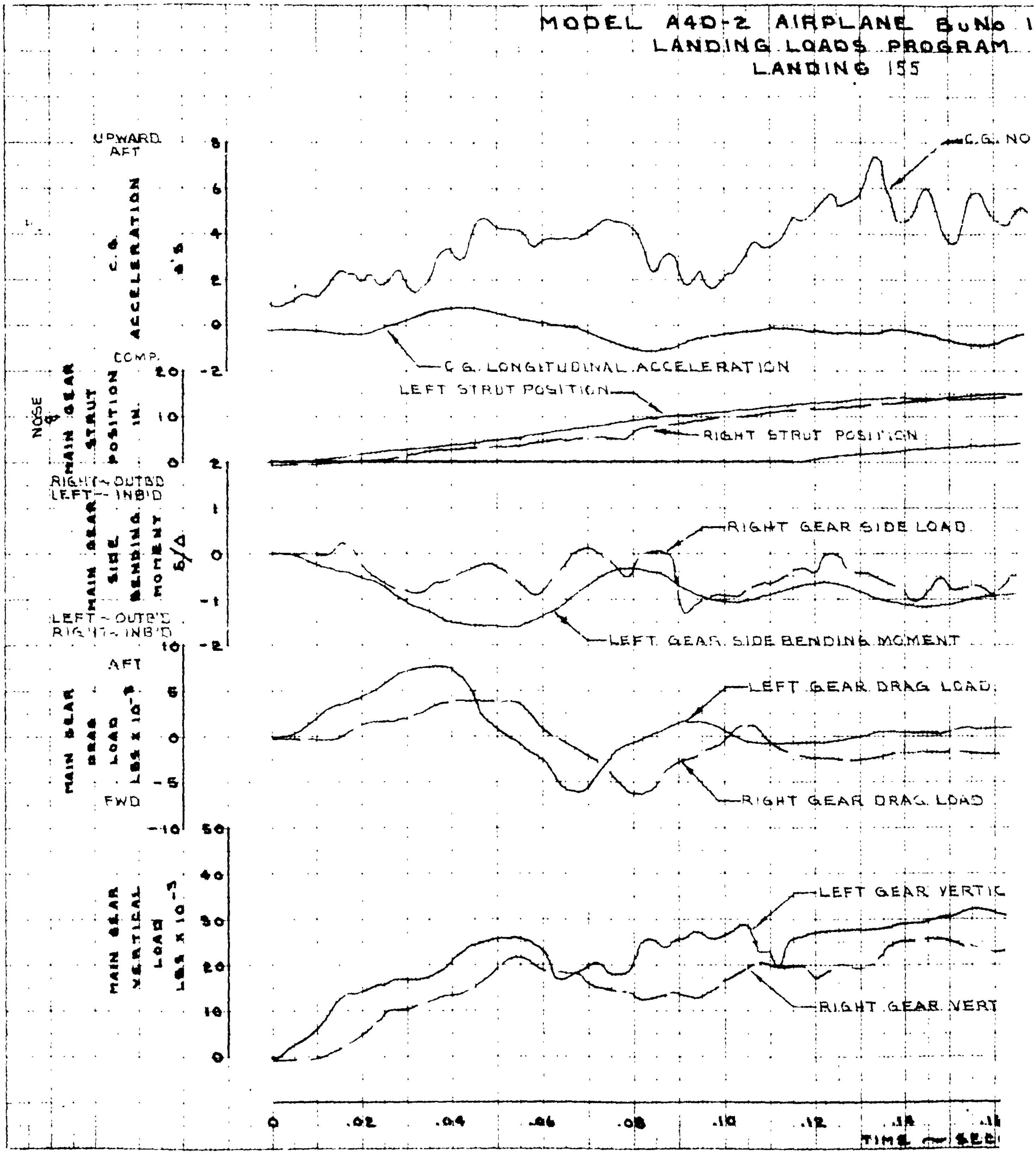
PREPARED BY
CHECKED BY
DATE
TITLE



K+E

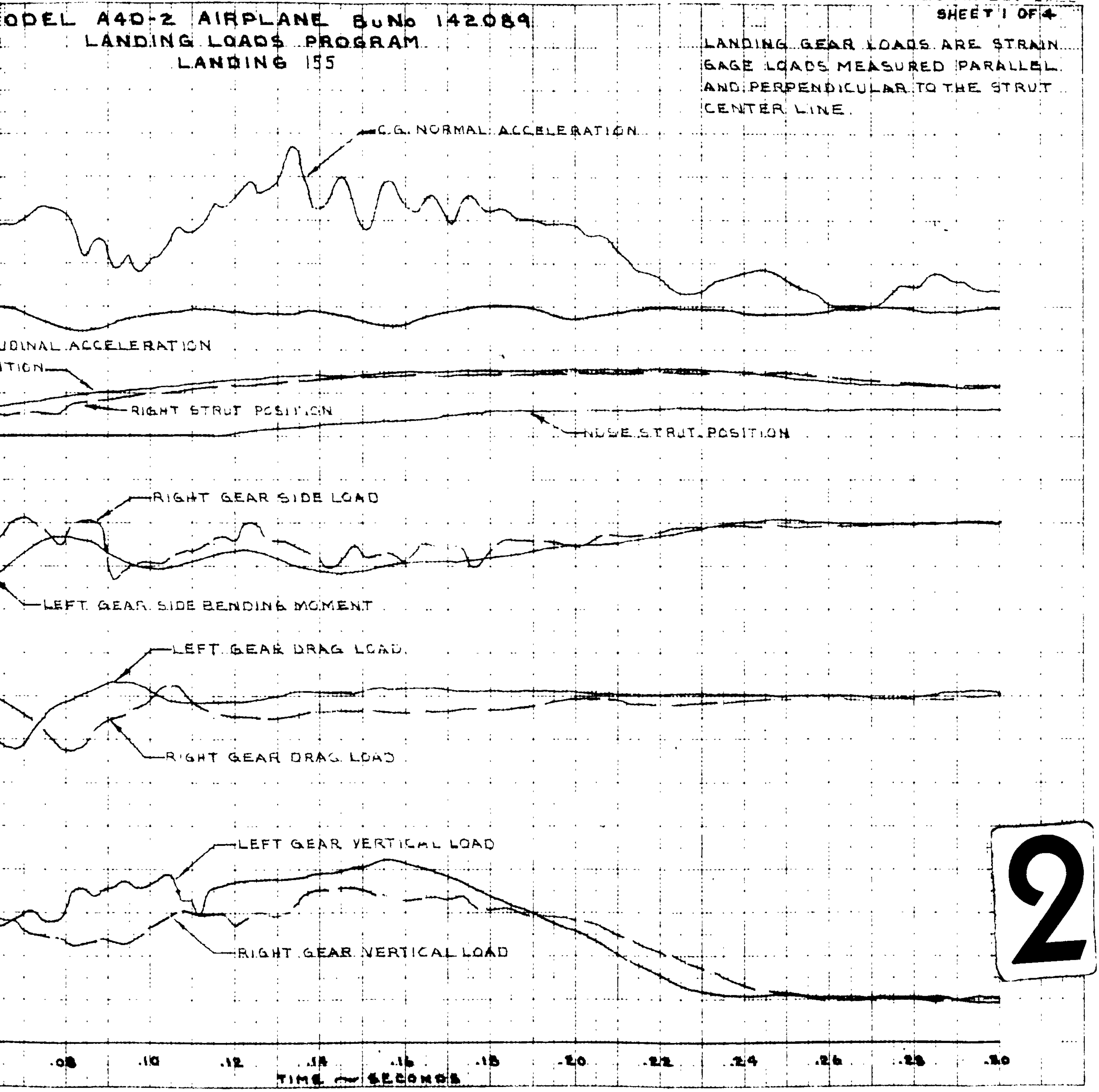
FORM ... REV. ...

PREPARED BY
CHECKED BY
DATE
TITLE



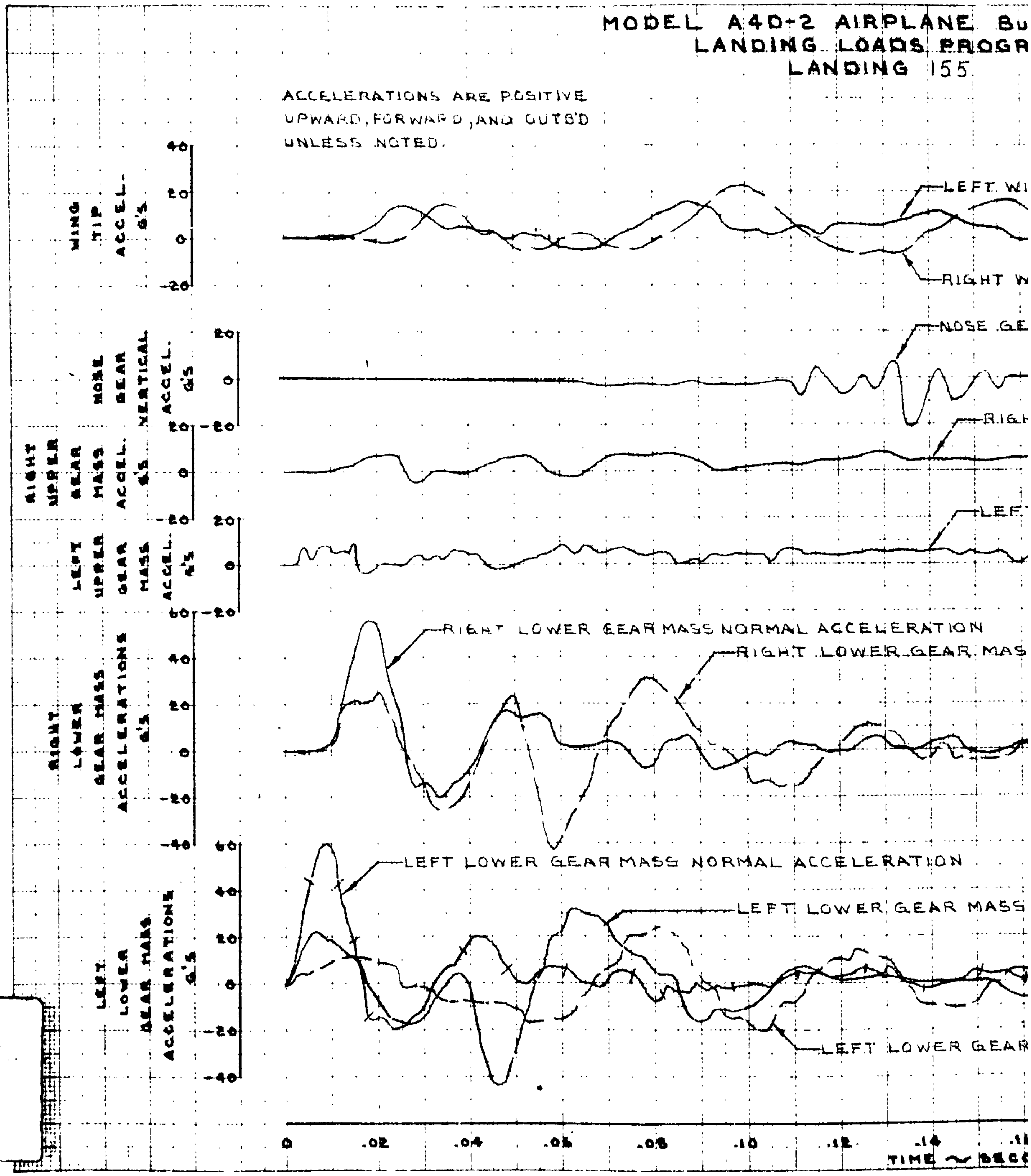
K+E

1


SHEET 1 OF 4
ODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 155
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE.
C.G. NORMAL ACCELERATION
UDINAL ACCELERATION
ITION
RIGHT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
LEFT GEAR VERTICAL LOAD
RIGHT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS
2

FORM 28 GP 1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



1

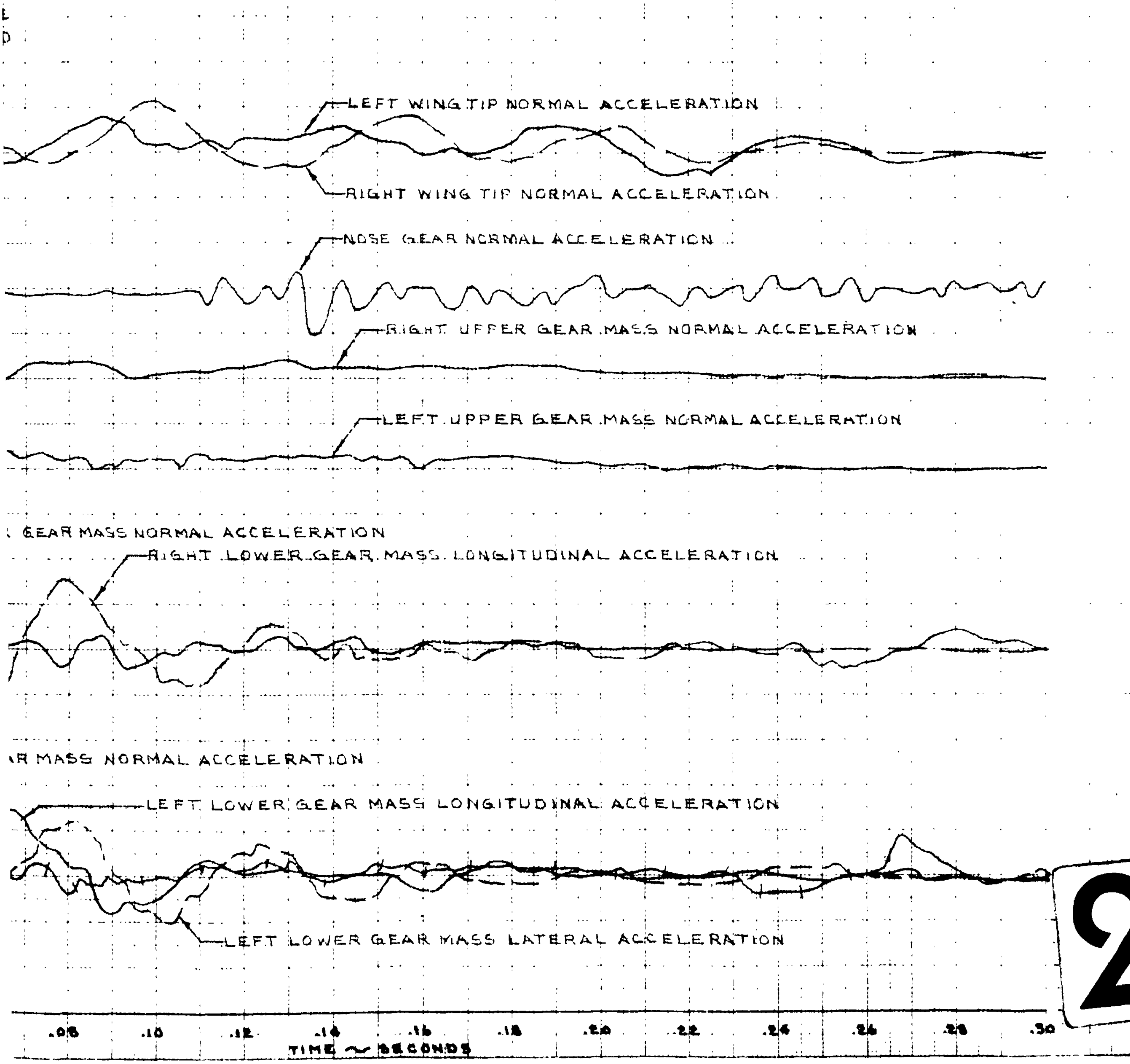
PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

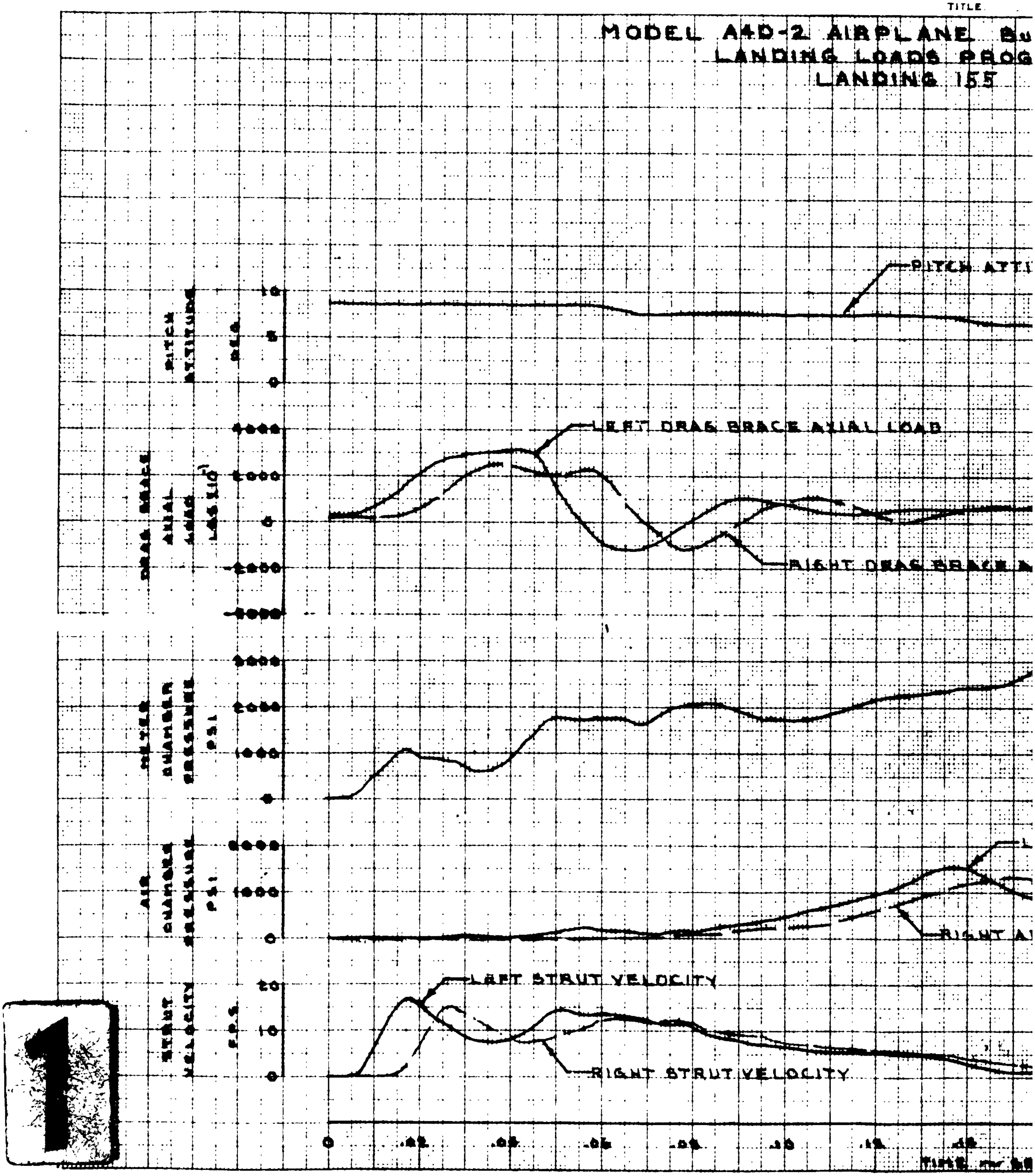
PAGE 8.4.55
MODEL A4D-2
REPORT NO. DEV 3616
SHEET 2 OF 4

MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 155



2

PREPARED BY
CHECKED BY
DATE
TITLE



K+E ALBANENE

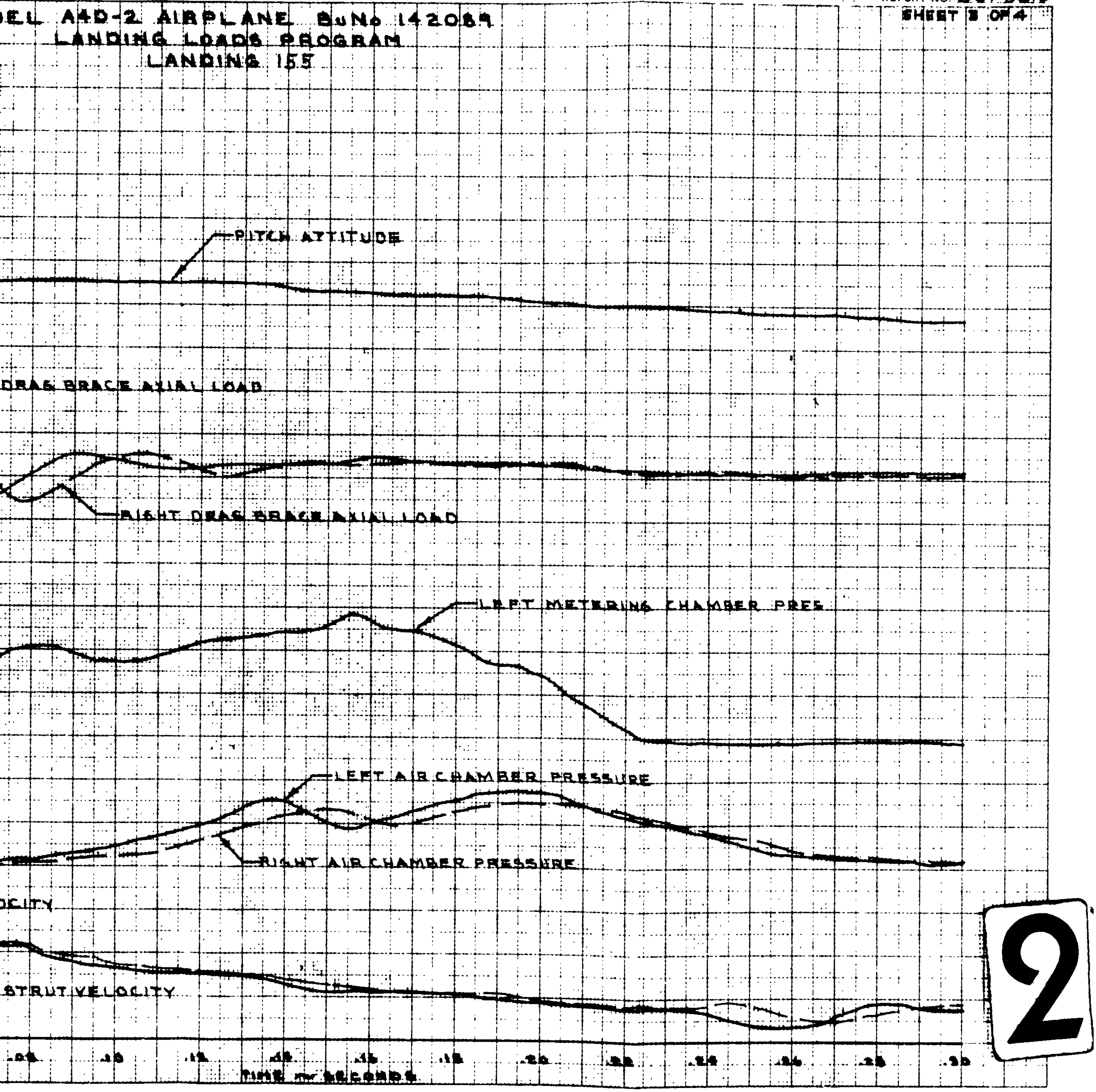
PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

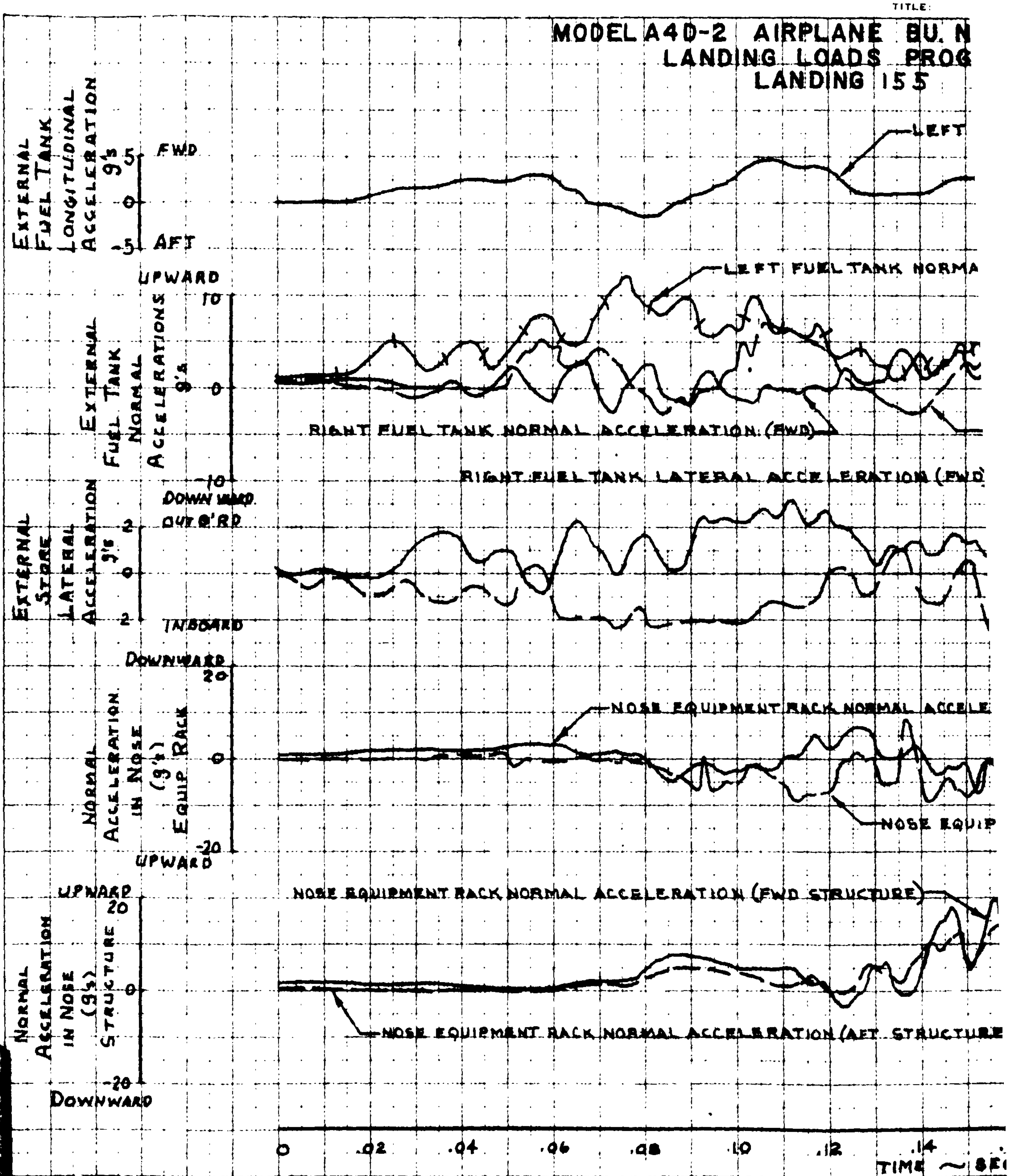
TESTING DIVISION

MODEL A4D-2

REPORT NO. DEV-3616



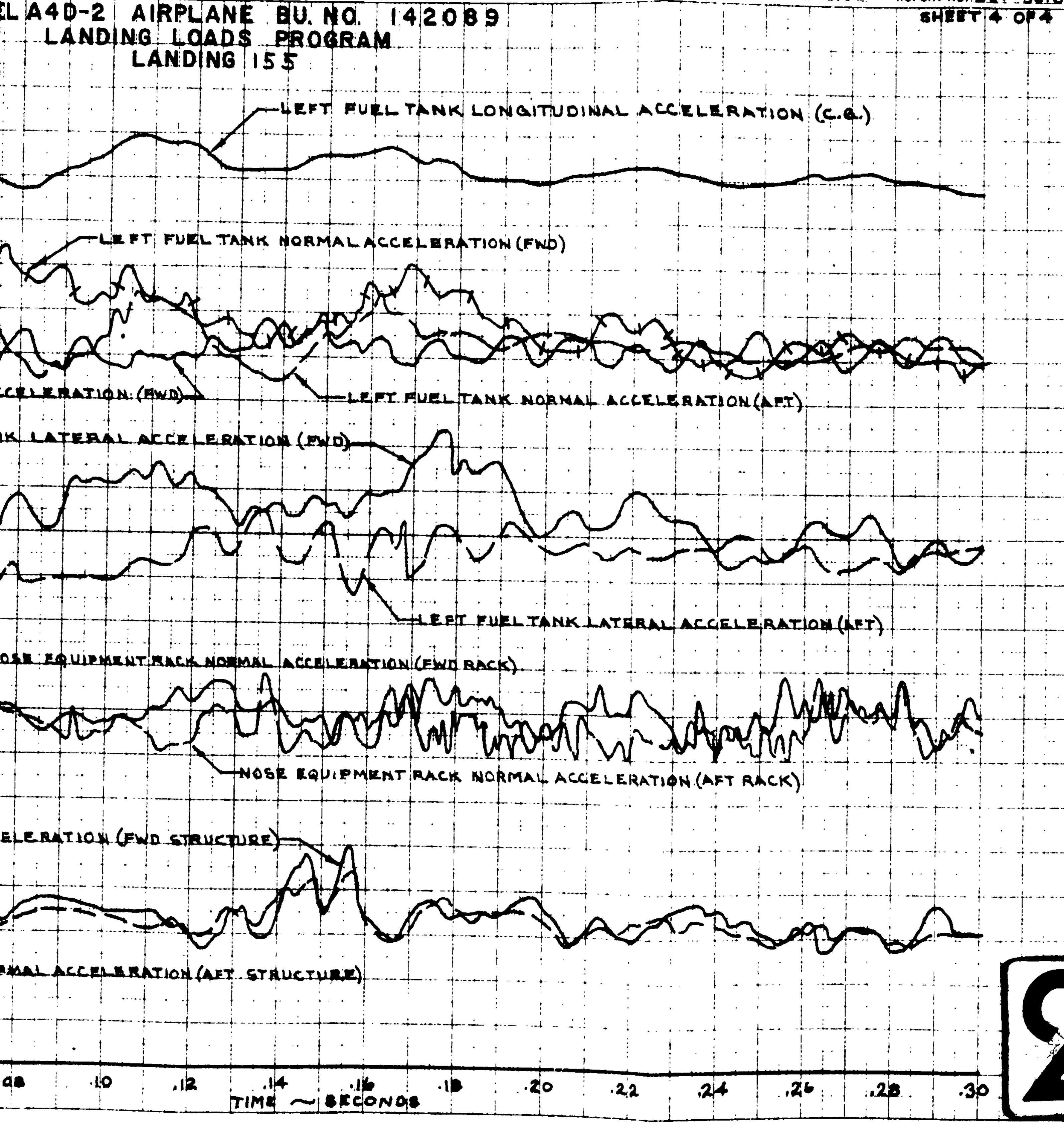
PREPARED B
CHECKED BY
DATE
TITLE:



03

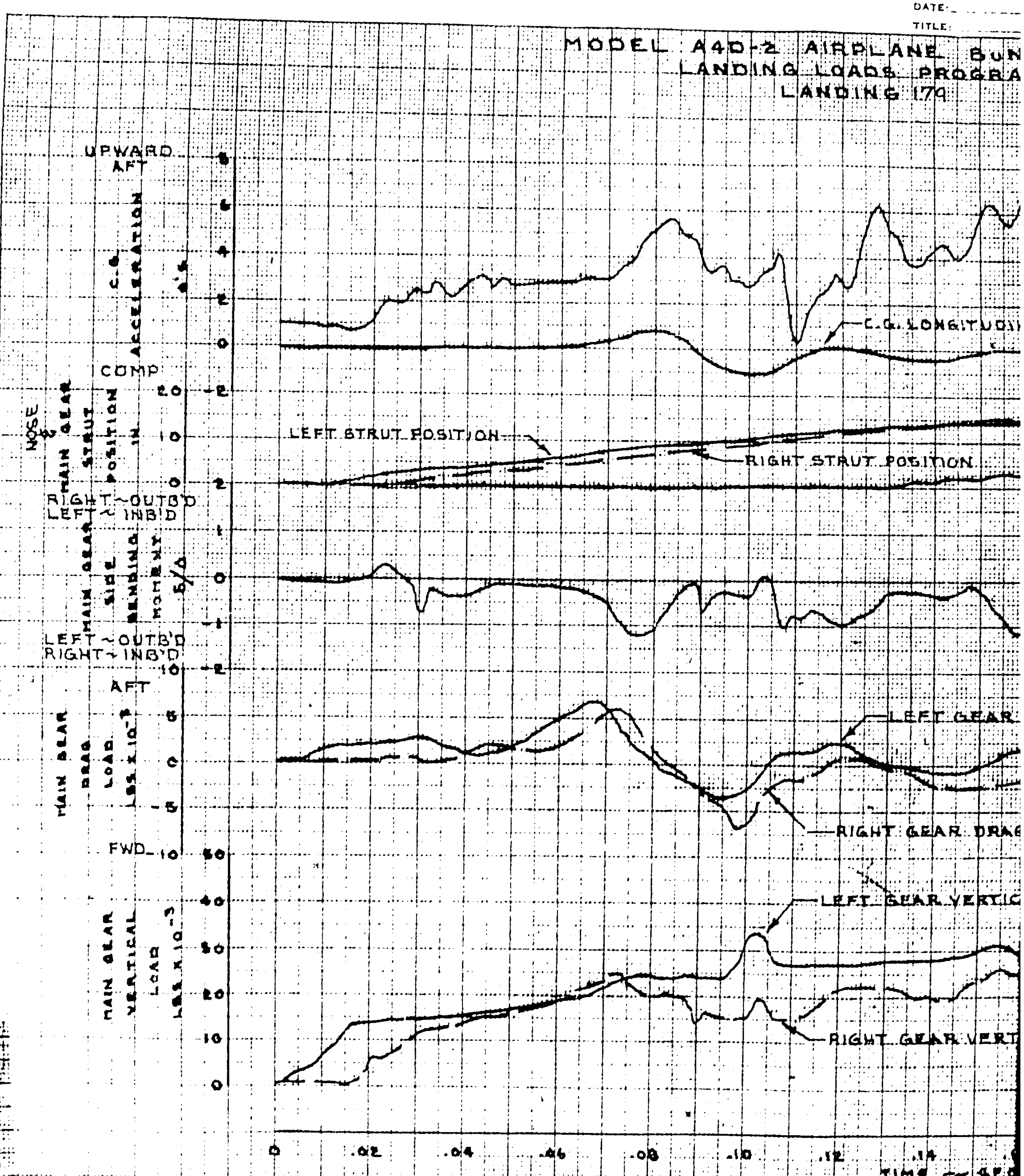
PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.
TESTING DIVISION



2

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

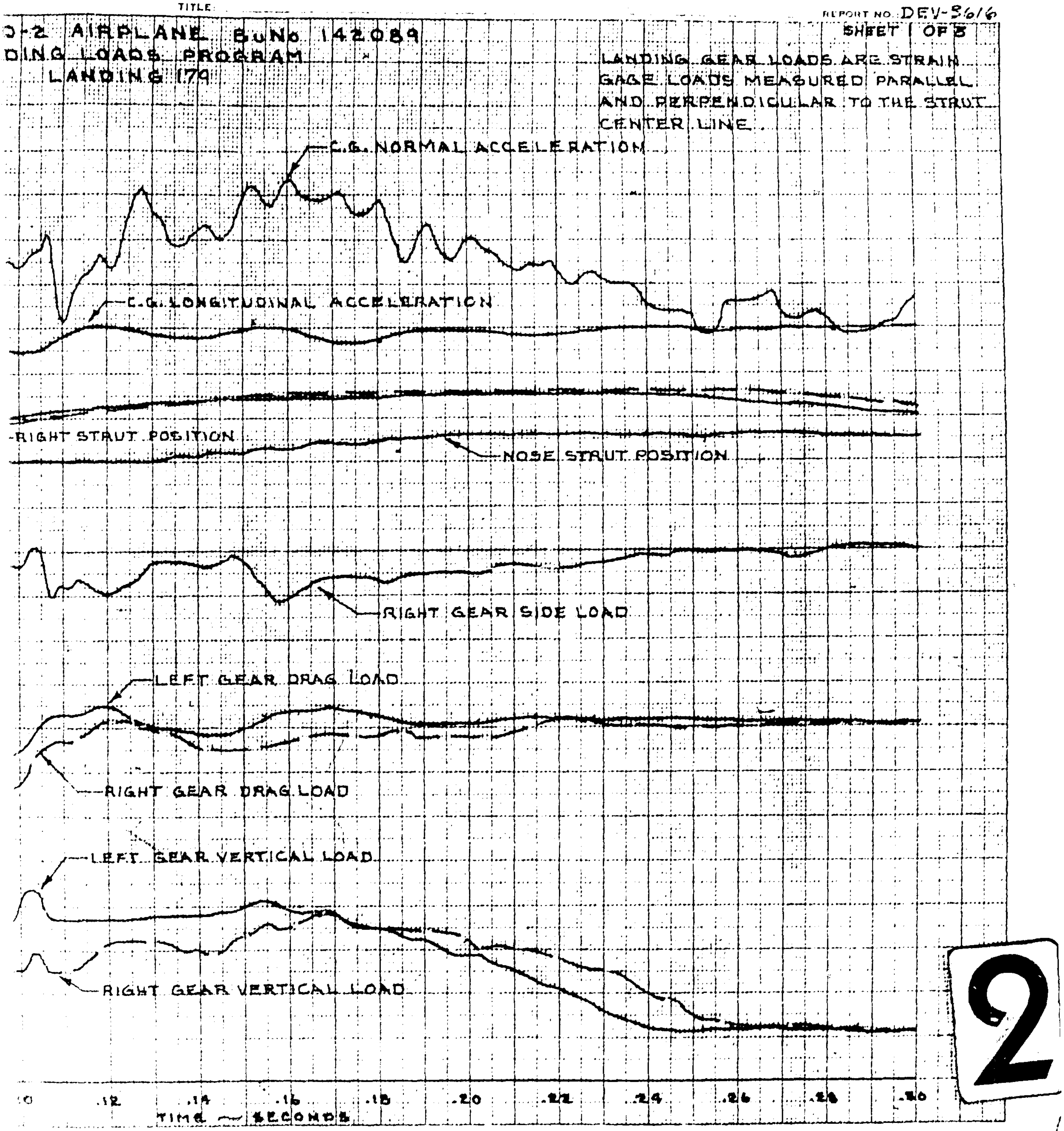


PREPARED BY:
CHECKED BY:
DATE:
TITLE:

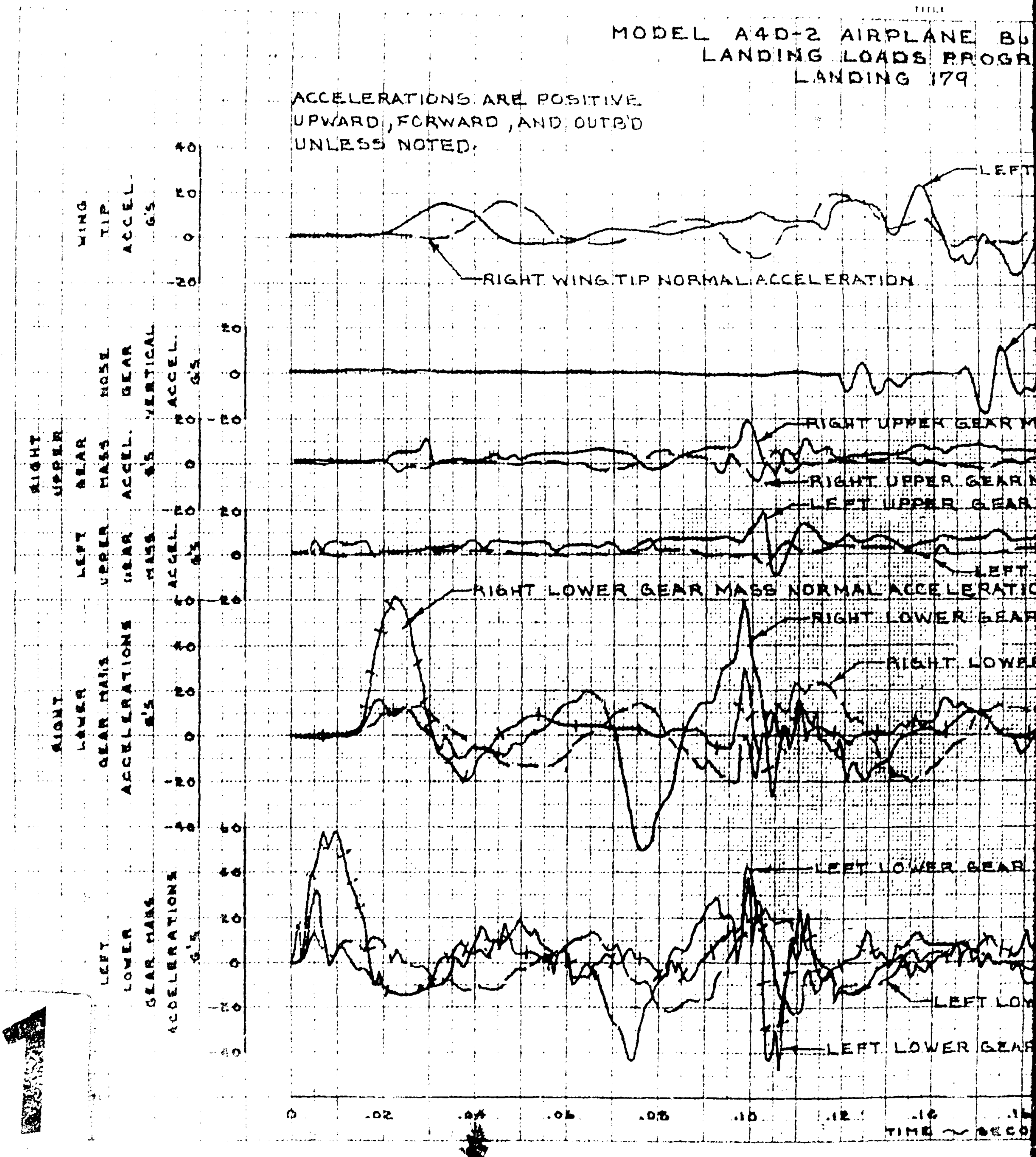
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.4.58
MODEL: A4D-2
REPORT NO. DEV-3616



PREPARED BY
CHECKED BY
DATE
TITLE

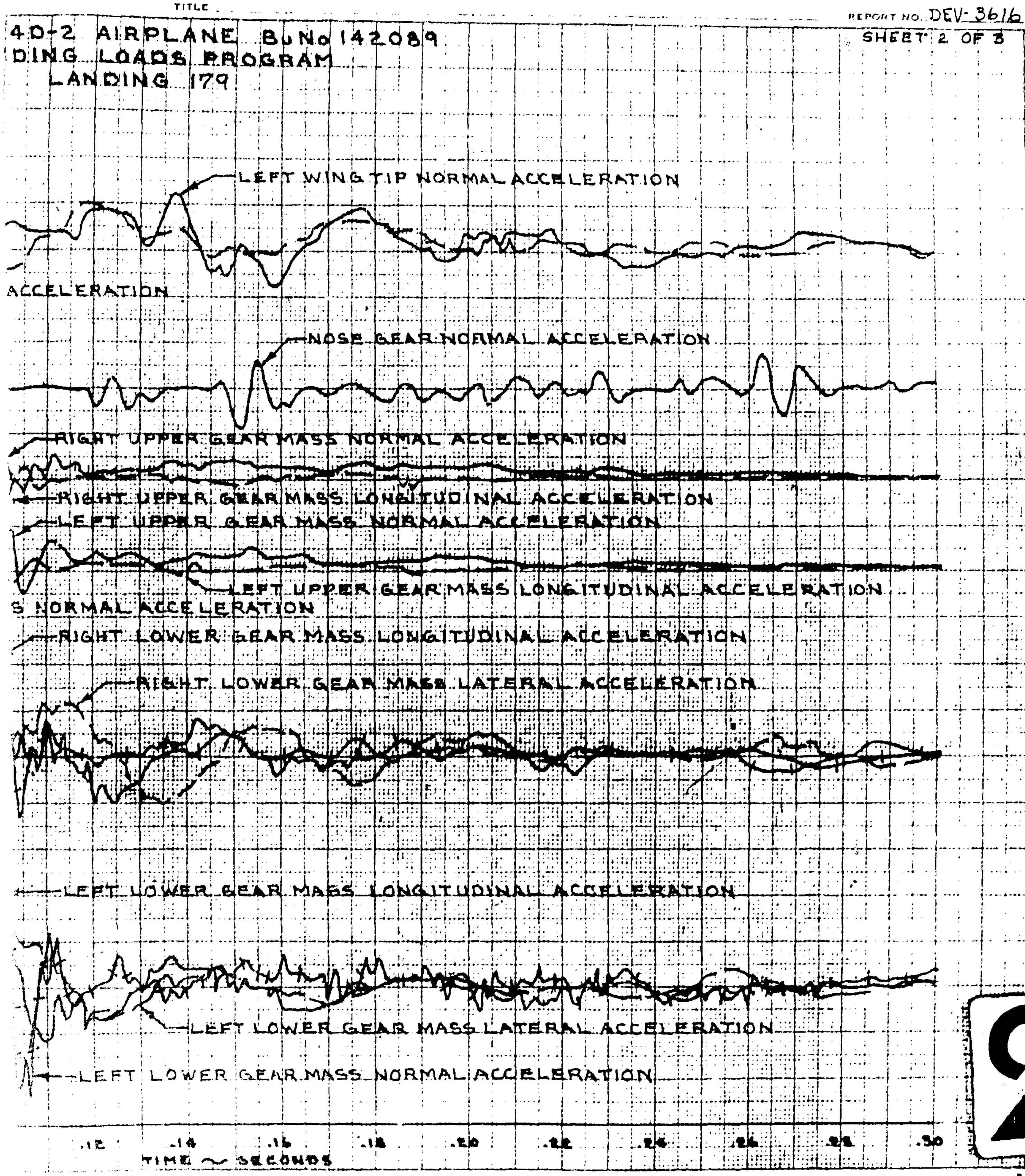


PREPARED BY:
CHECKED BY:
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

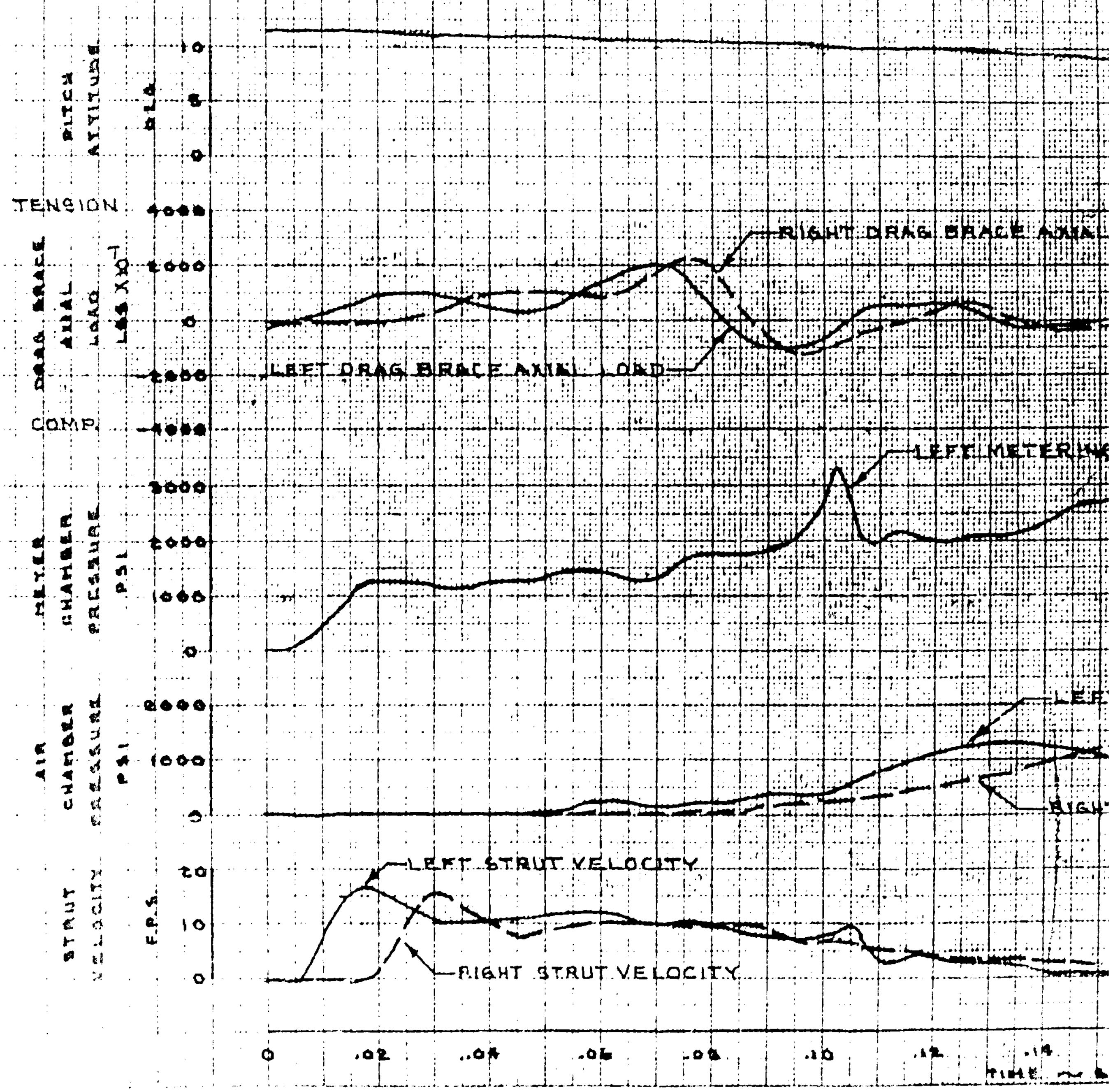
PAGE: 8.4.59
MODEL A4D-2
REPORT NO. DEV-3616
SHEET 2 OF 3



2

PREPARED BY
CHECKED BY
DATE
TITLE:

MODEL A4D-2 AIRPLANE
LANDING LOADS PROG
LANDING 179

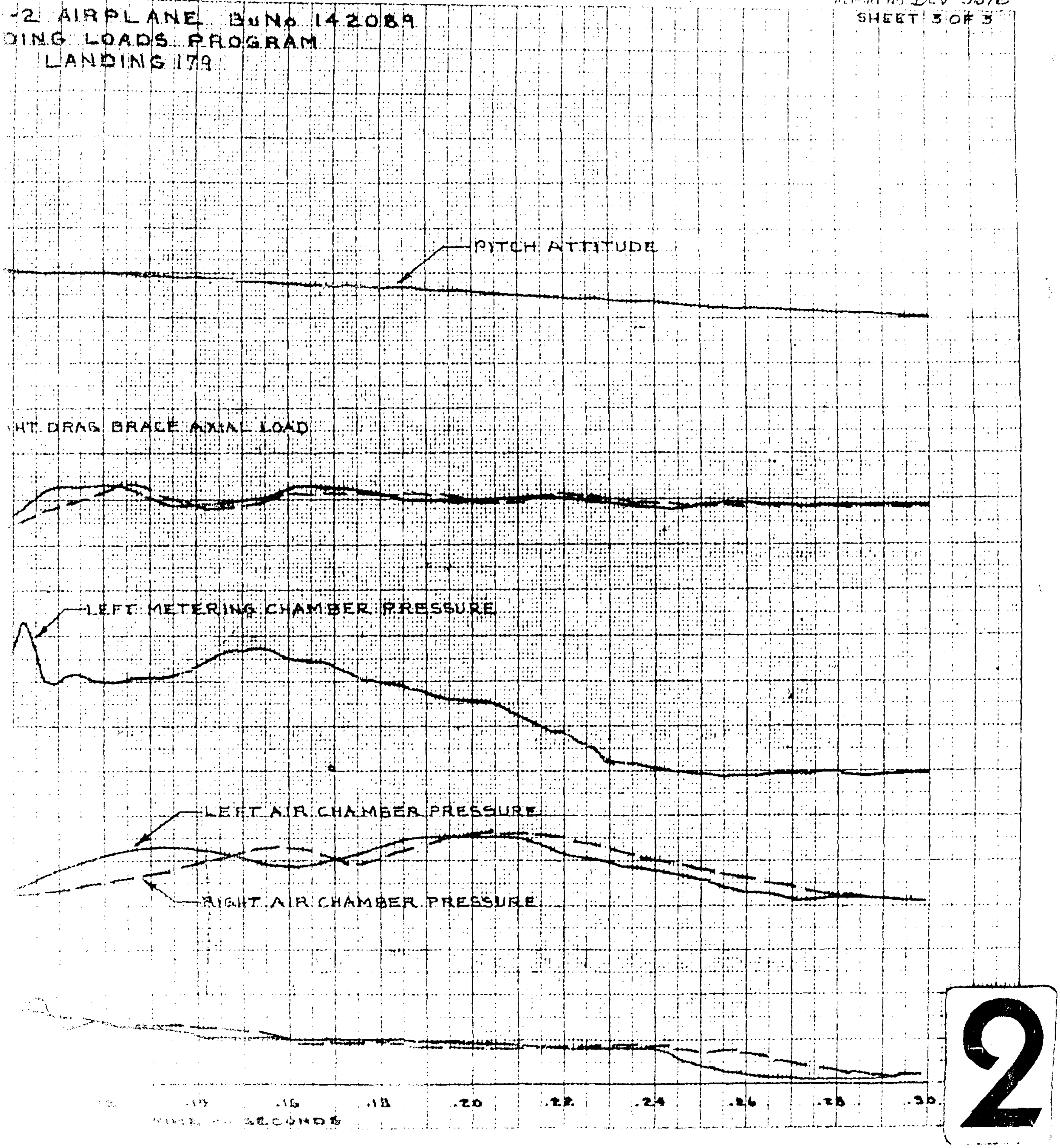


PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

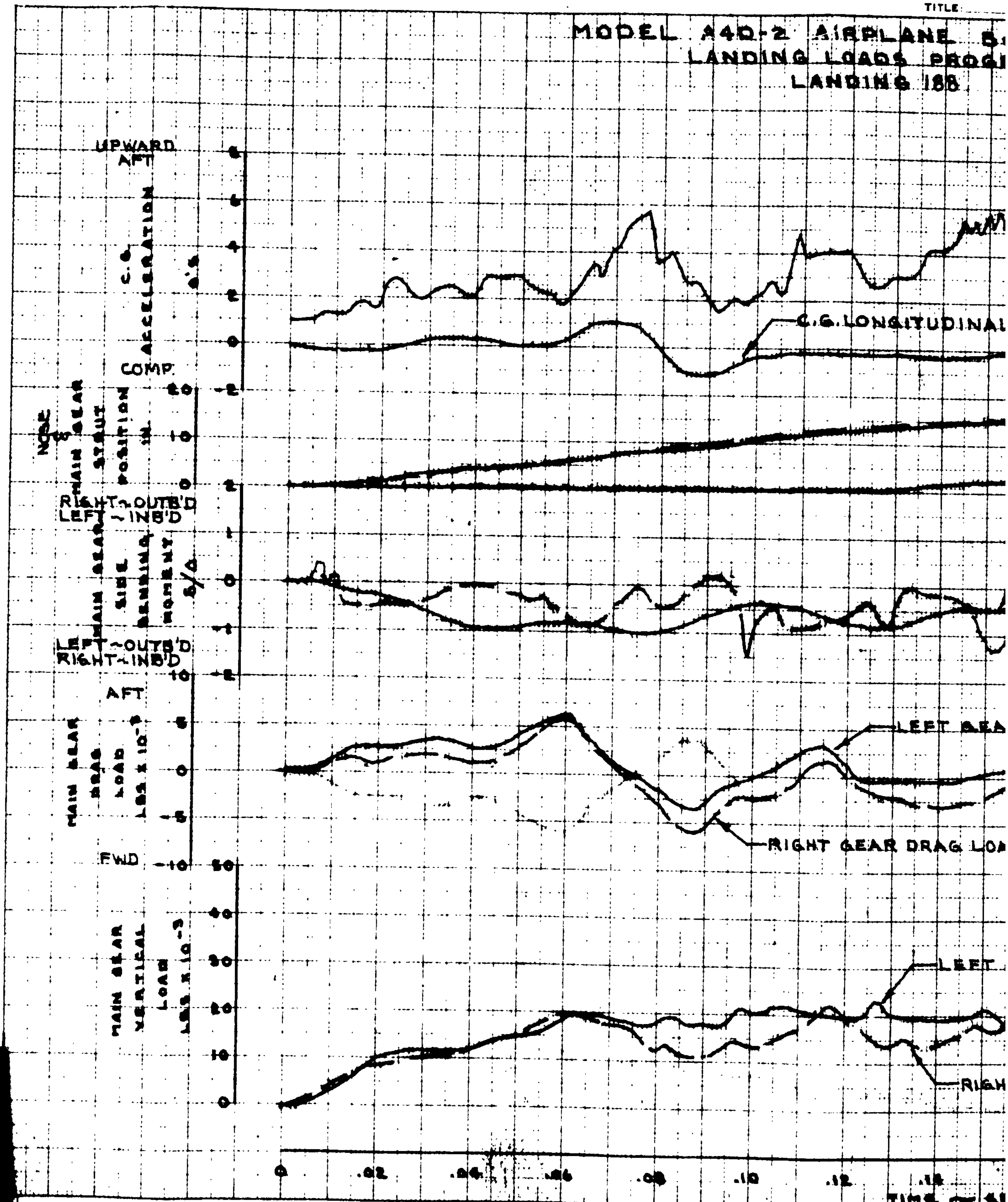
TESTING DIVISION

PAGE 8.4.60
MODEL A4D-2
REPORT NO. DEV-3616



FORM 25 (P.)
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



84

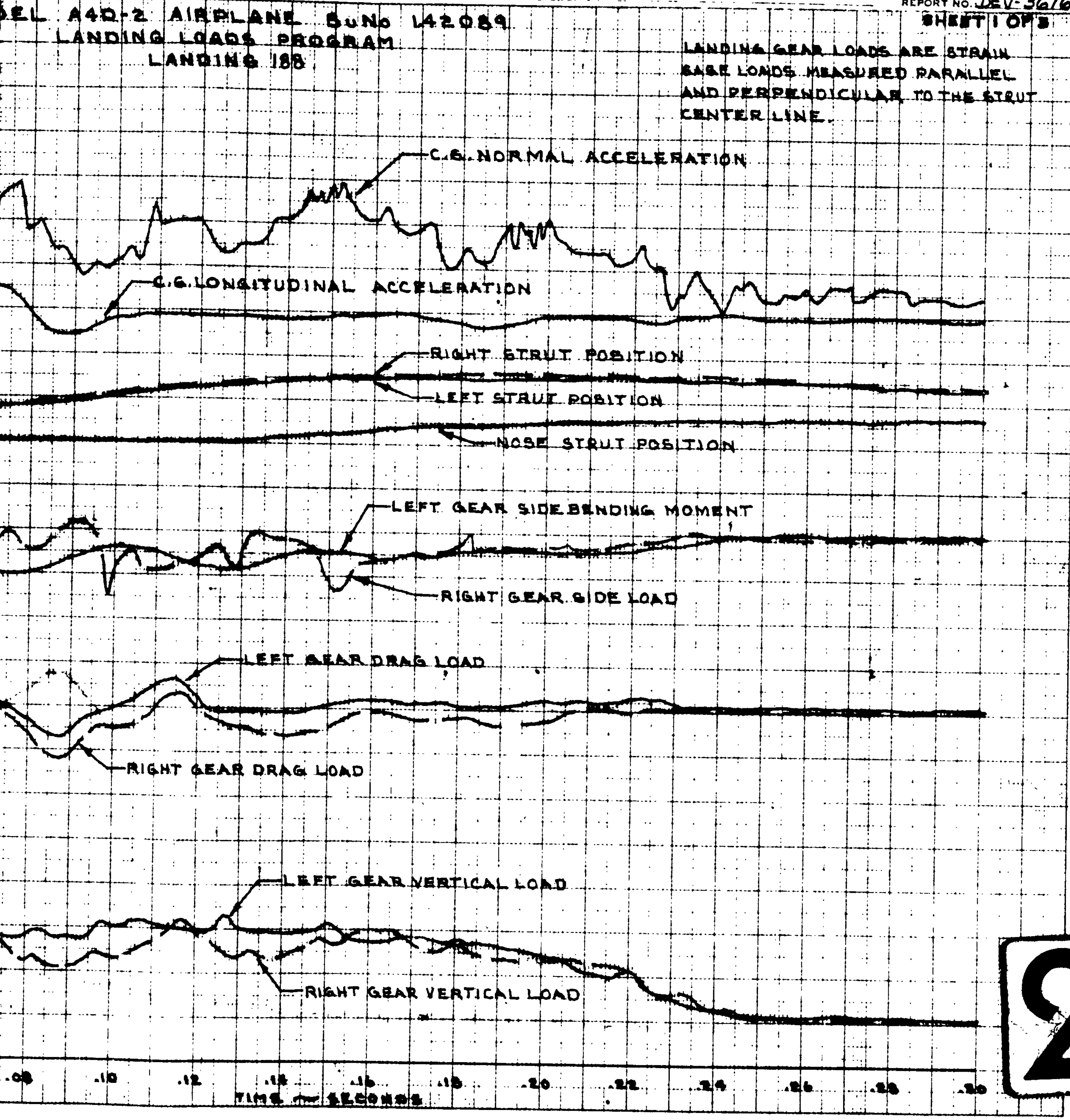
K·E

PREPARED BY:
CHECKED BY
DATE
TITLE

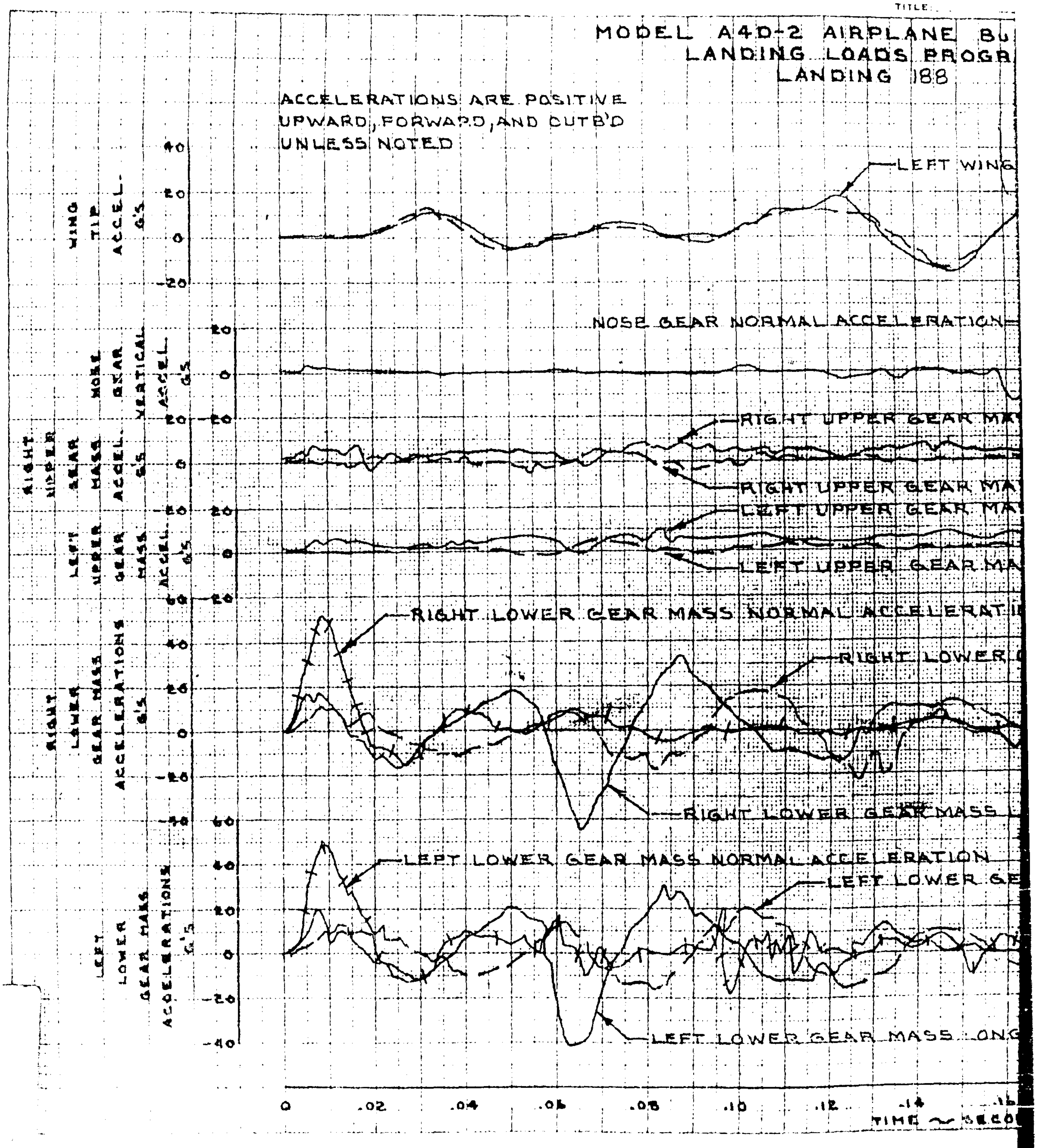
DOUGLAS AIRCRAFT COMPANY, INC.

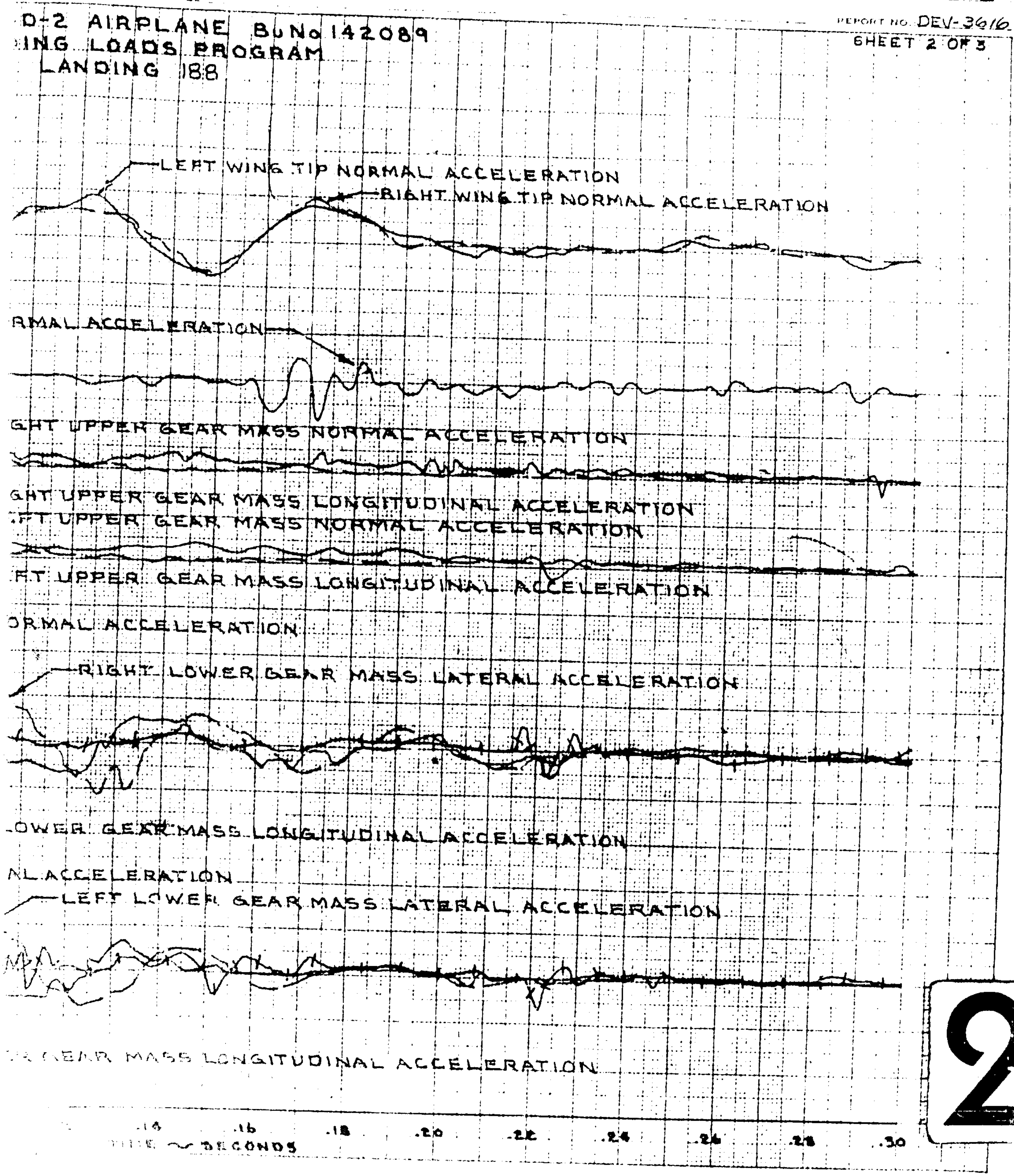
TESTING DIVISION

PAGE 8.4.61
MODEL A4D-2
REPORT NO. DEV-3616



2

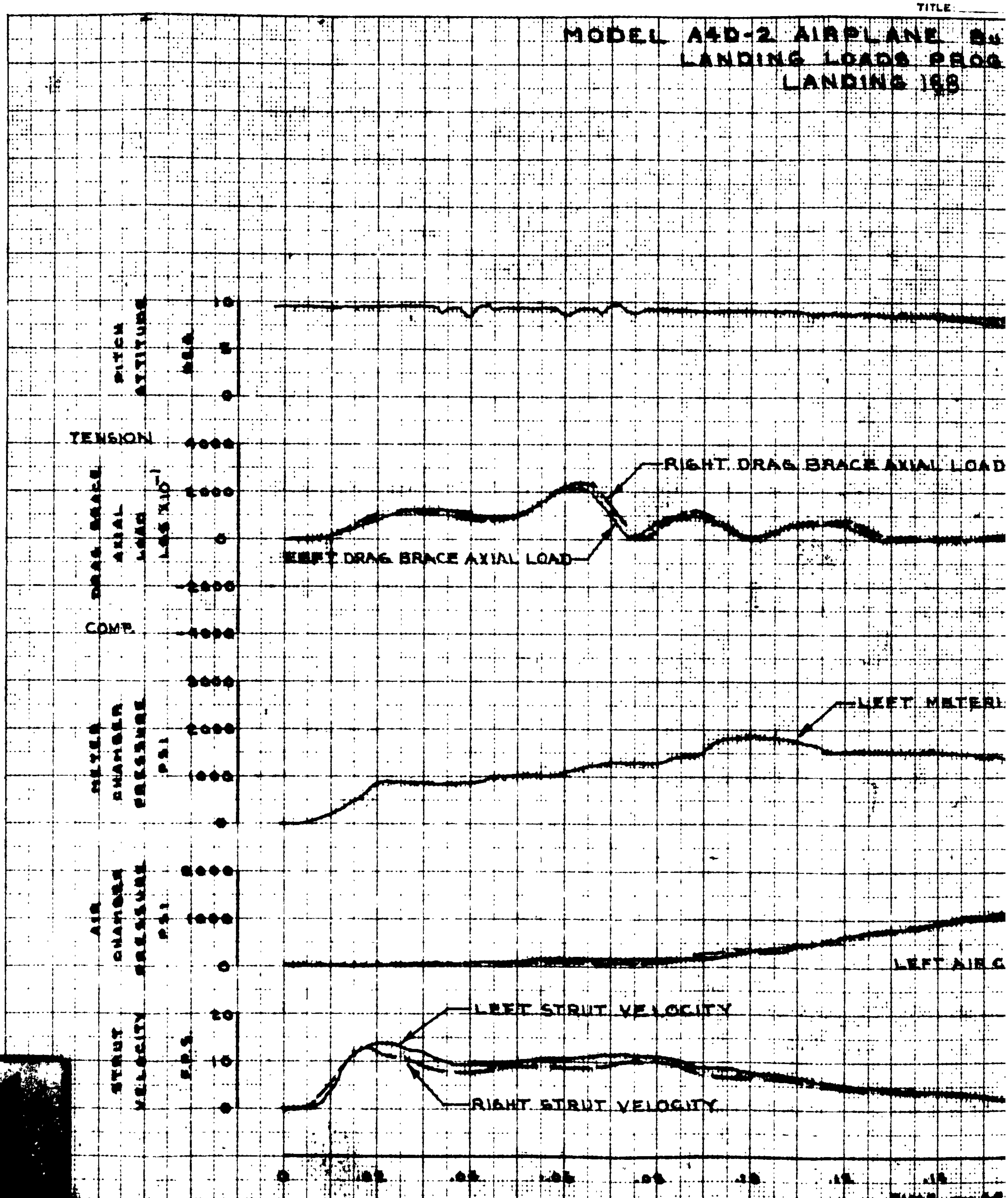

MODEL A4D-2 AIRPLANE B
LANDING LOADS PROGR
LANDING 188
ACCELERATIONS ARE POSITIVE
UPWARD, FORWARD, AND OUTB'D
UNLESS NOTED
LEFT WING
WING TIP ACCEL. G'S
NOSE GEAR NORMAL ACCELERATION
NOSE GEAR VERTICAL ACCEL. G'S
RIGHT UPPER GEAR MASS ACCEL. G'S
RIGHT UPPER GEAR MA
LEFT UPPER GEAR MASS ACCEL. G'S
LEFT UPPER GEAR MA
RIGHT LOWER GEAR MASS NORMAL ACCELERATI
RIGHT LOWER
RIGHT LOWER GEAR MASS
RIGHT LOWER GEAR MASS ACCELERATIONS G'S
LEFT LOWER GEAR MASS NORMAL ACCELERATION
LEFT LOWER GE
LEFT LOWER GEAR MASS LONG
LEFT LOWER GEAR MASS ACCELERATIONS G'S
40
20
0
-20
-40
60
0
.02
.04
.06
.08
.10
.12
.14
.16
TIME ~ SECO


SHEET 2 OF 3
D-2 AIRPLANE BuNo 142089
ING LOADS PROGRAM
LANDING 188
LEFT WING TIP NORMAL ACCELERATION
RIGHT WING TIP NORMAL ACCELERATION
RMAL ACCELERATION
GHT UPPER GEAR MASS NORMAL ACCELERATION
GHT UPPER GEAR MASS LONGITUDINAL ACCELERATION
FT UPPER GEAR MASS NORMAL ACCELERATION
FT UPPER GEAR MASS LONGITUDINAL ACCELERATION
ORMAL ACCELERATION
RIGHT LOWER GEAR MASS LATERAL ACCELERATION
OWER GEAR MASS LONGITUDINAL ACCELERATION
NL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
GEAR MASS LONGITUDINAL ACCELERATION
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

2

FORM 26 BP 1
(REV. 7-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:



K-E

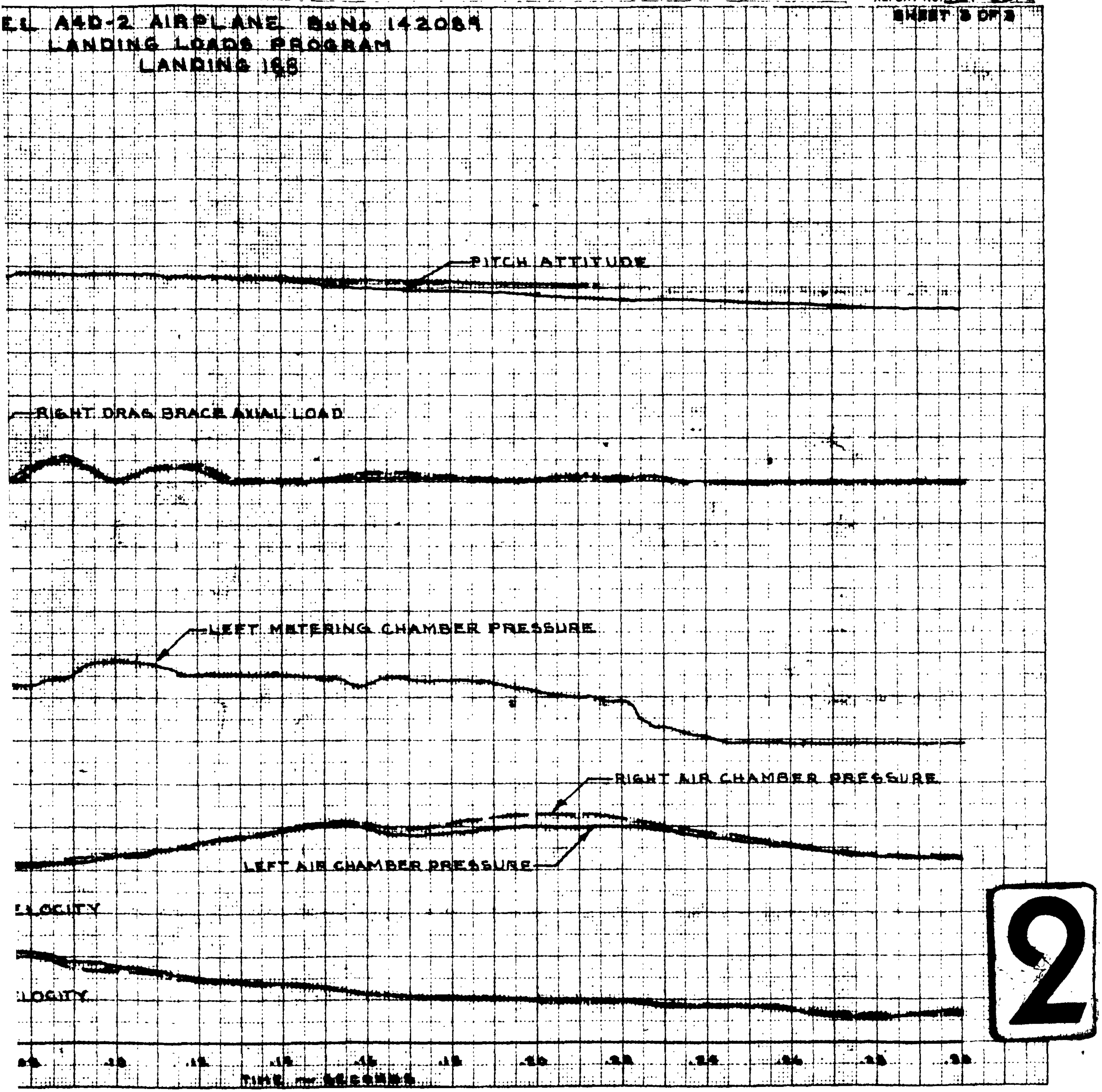
98

PREPARED BY:
CHECKED BY:
DATE:
TITLE

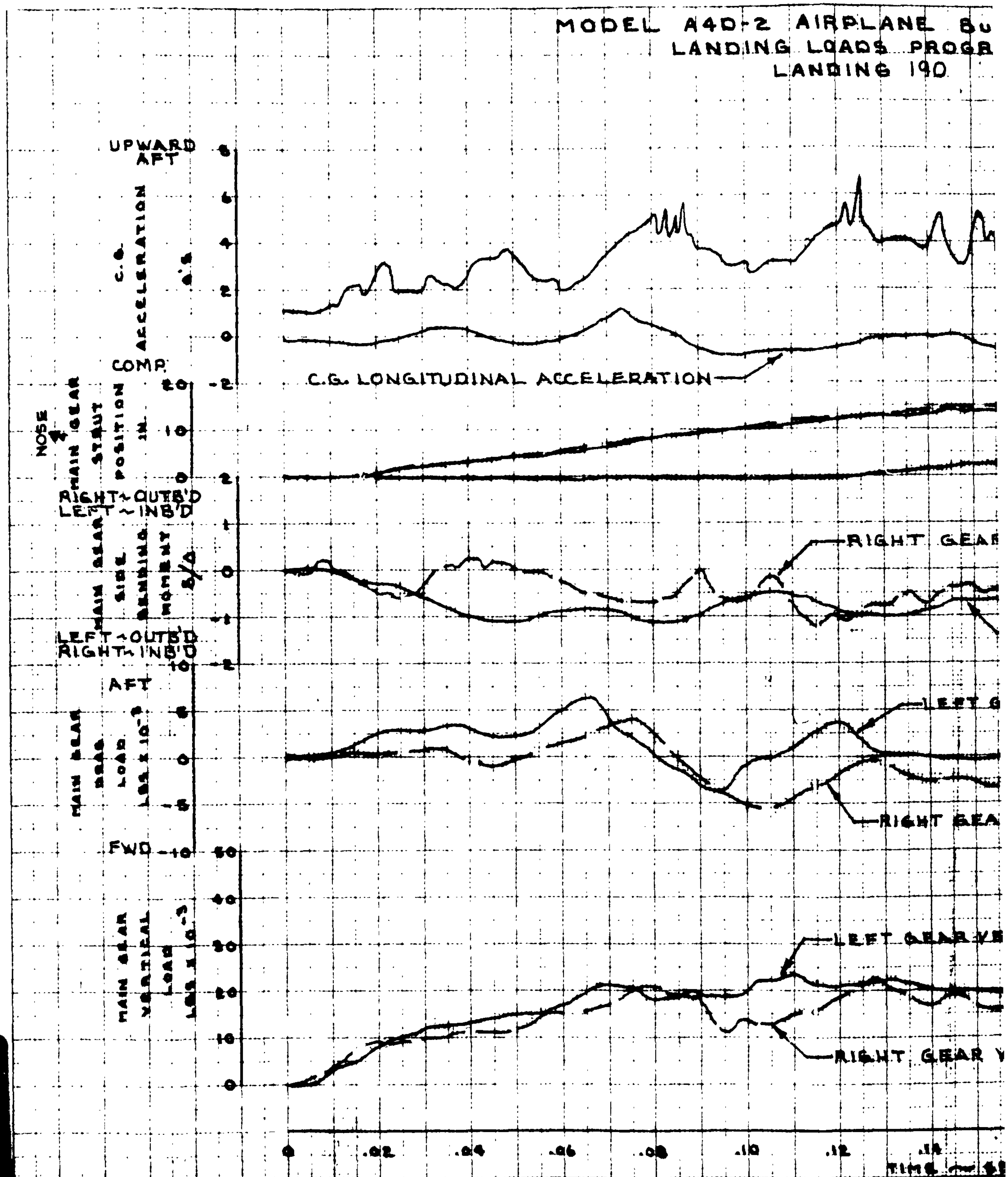
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.463
MODEL: A4D-2
REPORT NO. DEV-3616

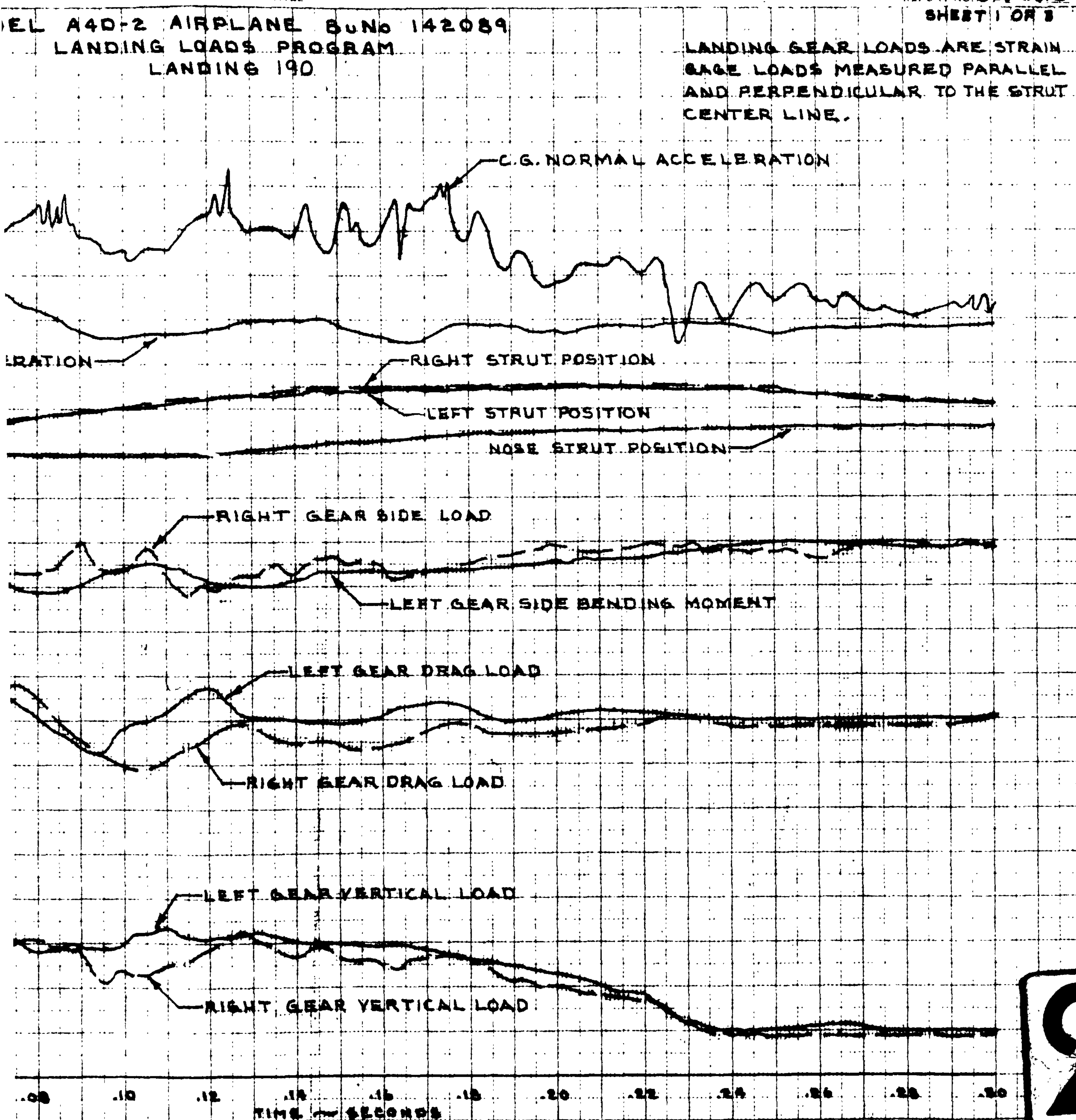


PREPARED BY:
CHECKED BY:
DATE
TITLE



K-E

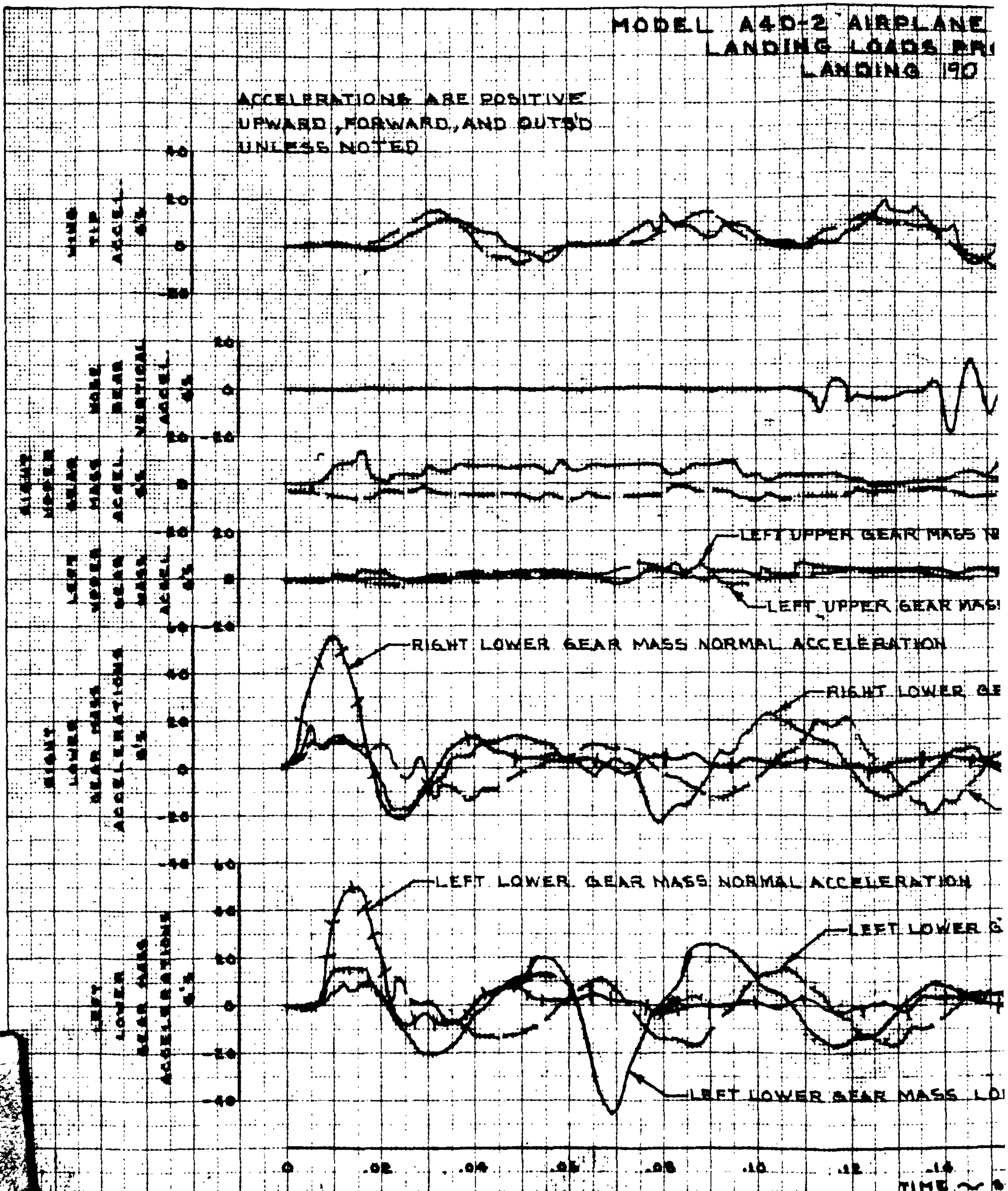
L8


SHEET 1 OF 3
EL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 190
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE.
C.G. NORMAL ACCELERATION
ERATION
RIGHT STRUT POSITION
LEFT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
LEFT GEAR VERTICAL LOAD
RIGHT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME — SECONDS

2

FORM 25 BP-1
(REV. 7-54)

PREPARED
CHECKED B
DATE:
TITLE:



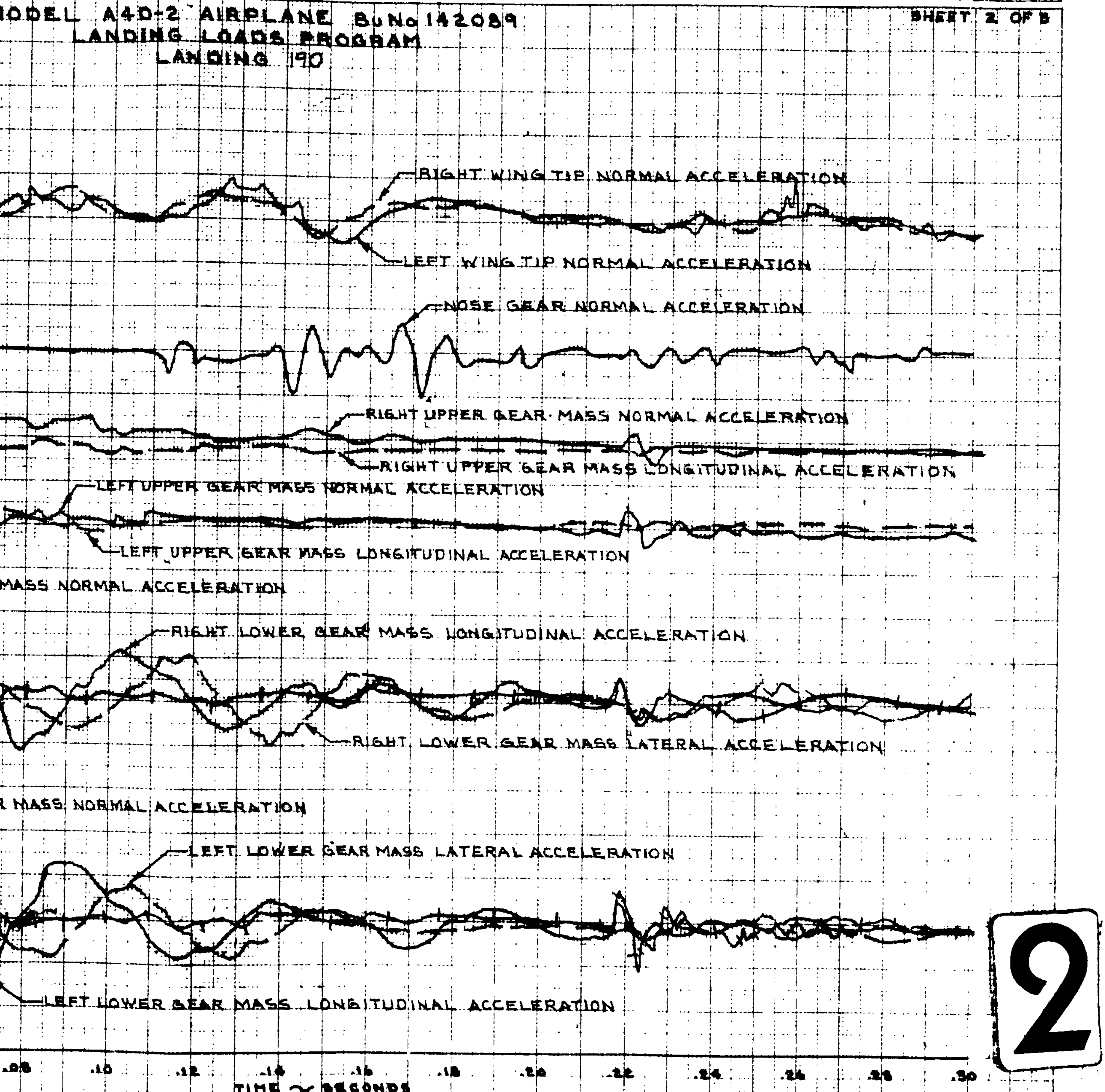
88

PREPARED BY:
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

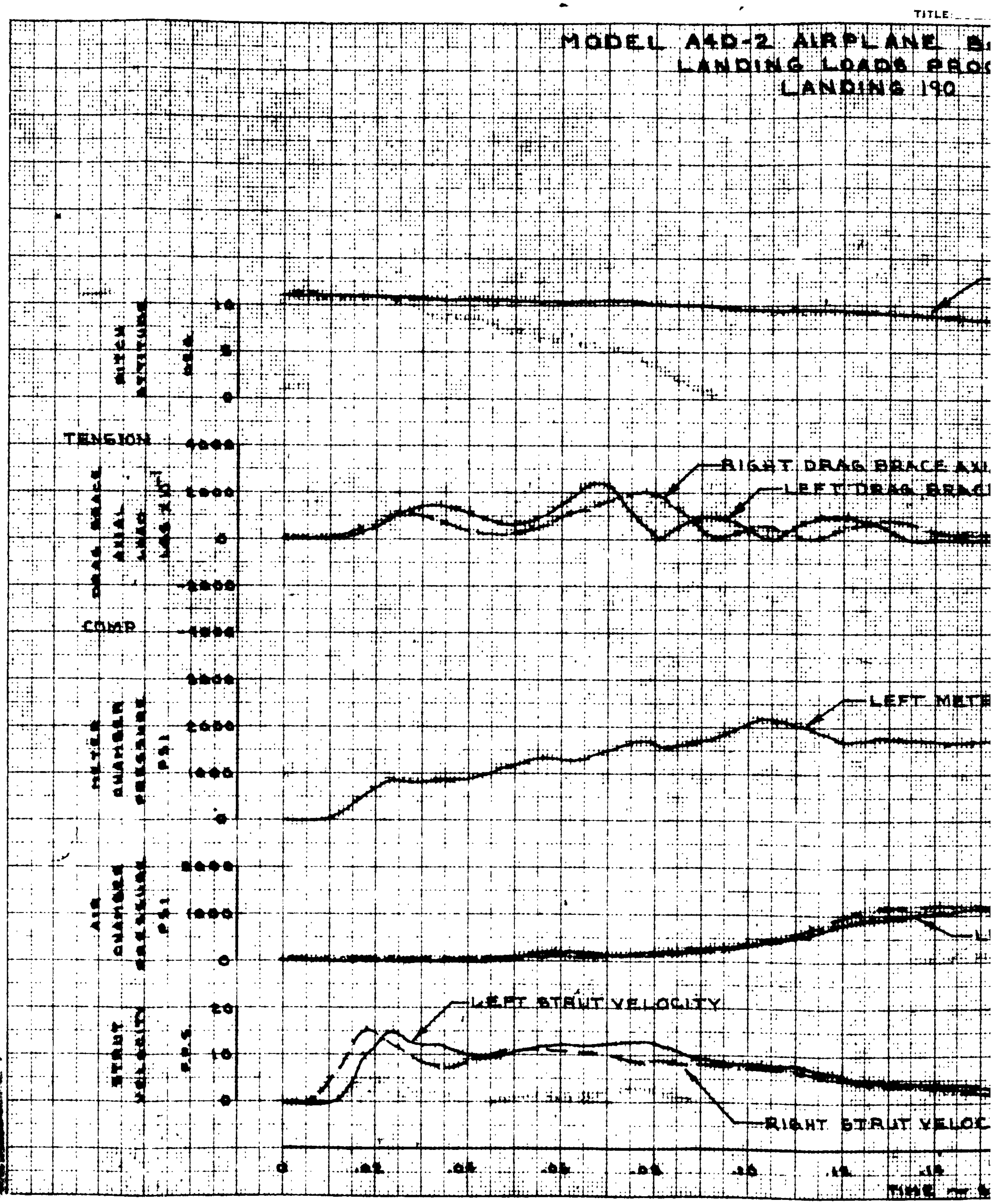
TESTING DIVISION

PAGE: 8.4.65
MODEL A4D-2
REPORT NO. DEV-3616



FORM 25 BP 1
(REV. 7-54)

PREPARED B
CHECKED BY
DATE
TITLE:



K-E

68

1

PREPARED BY:
CHECKED BY:
DATE
TITLE

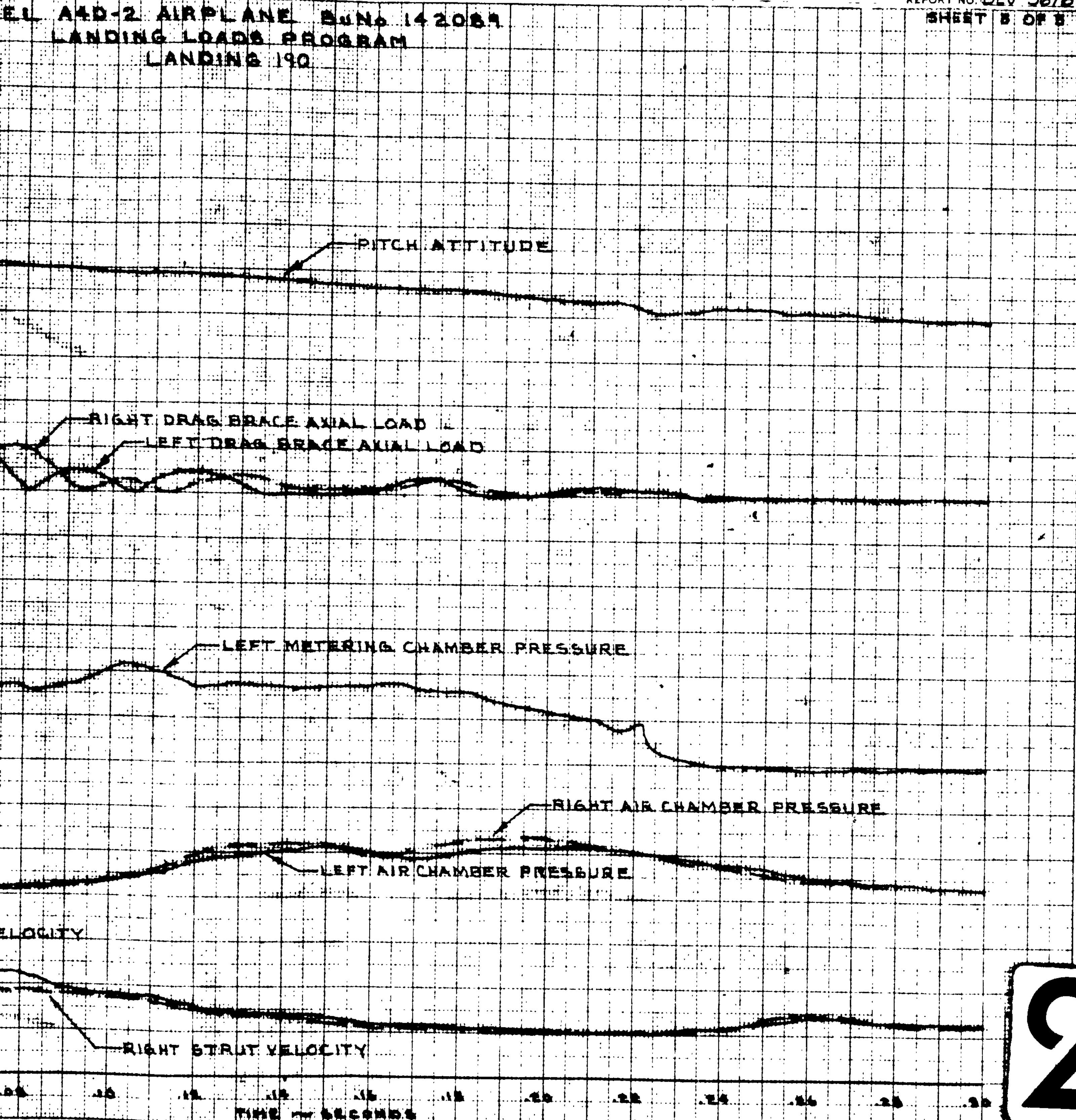
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE 8.4.66

MODEL A4D-2

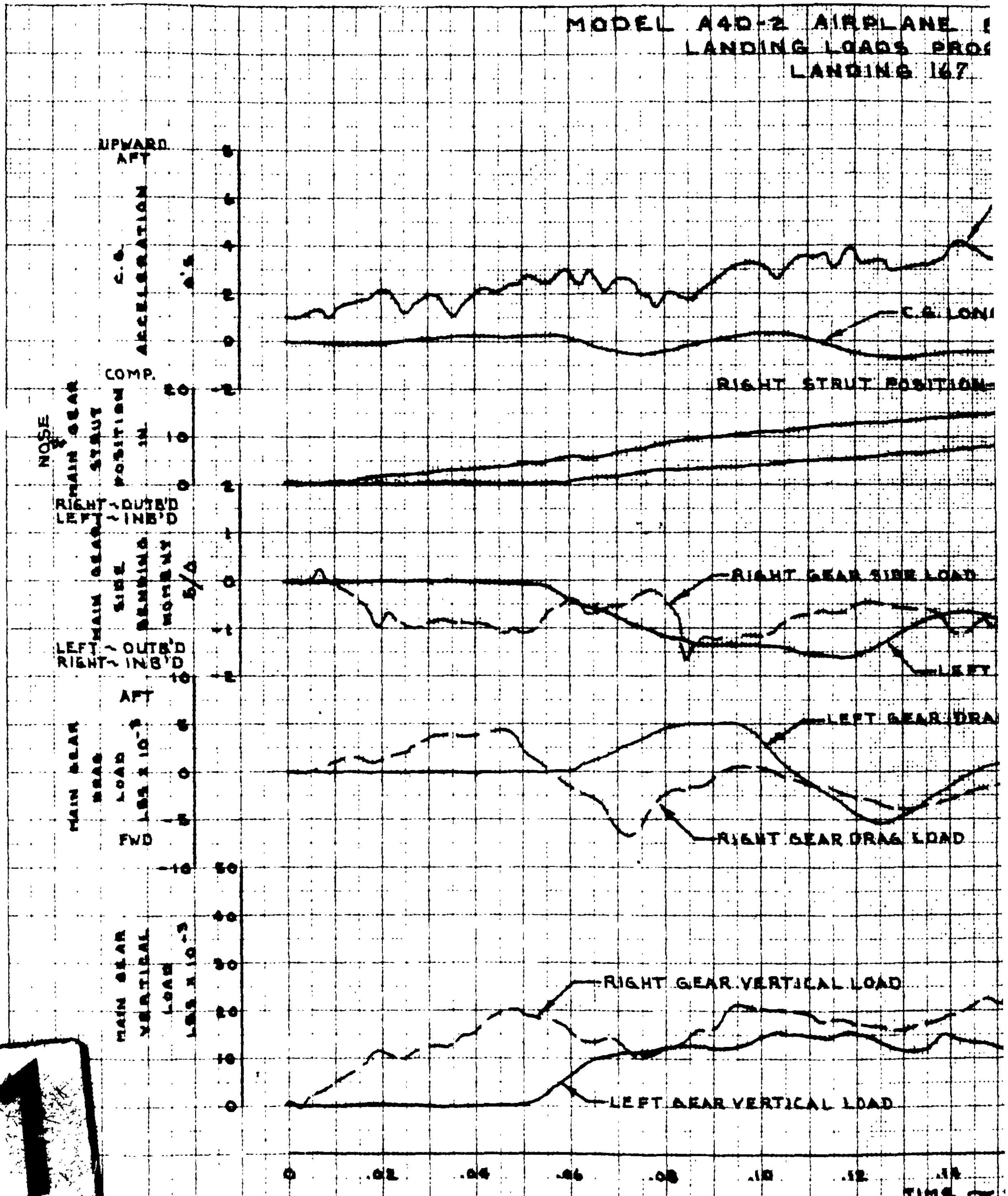
REPORT NO. DEV-3616



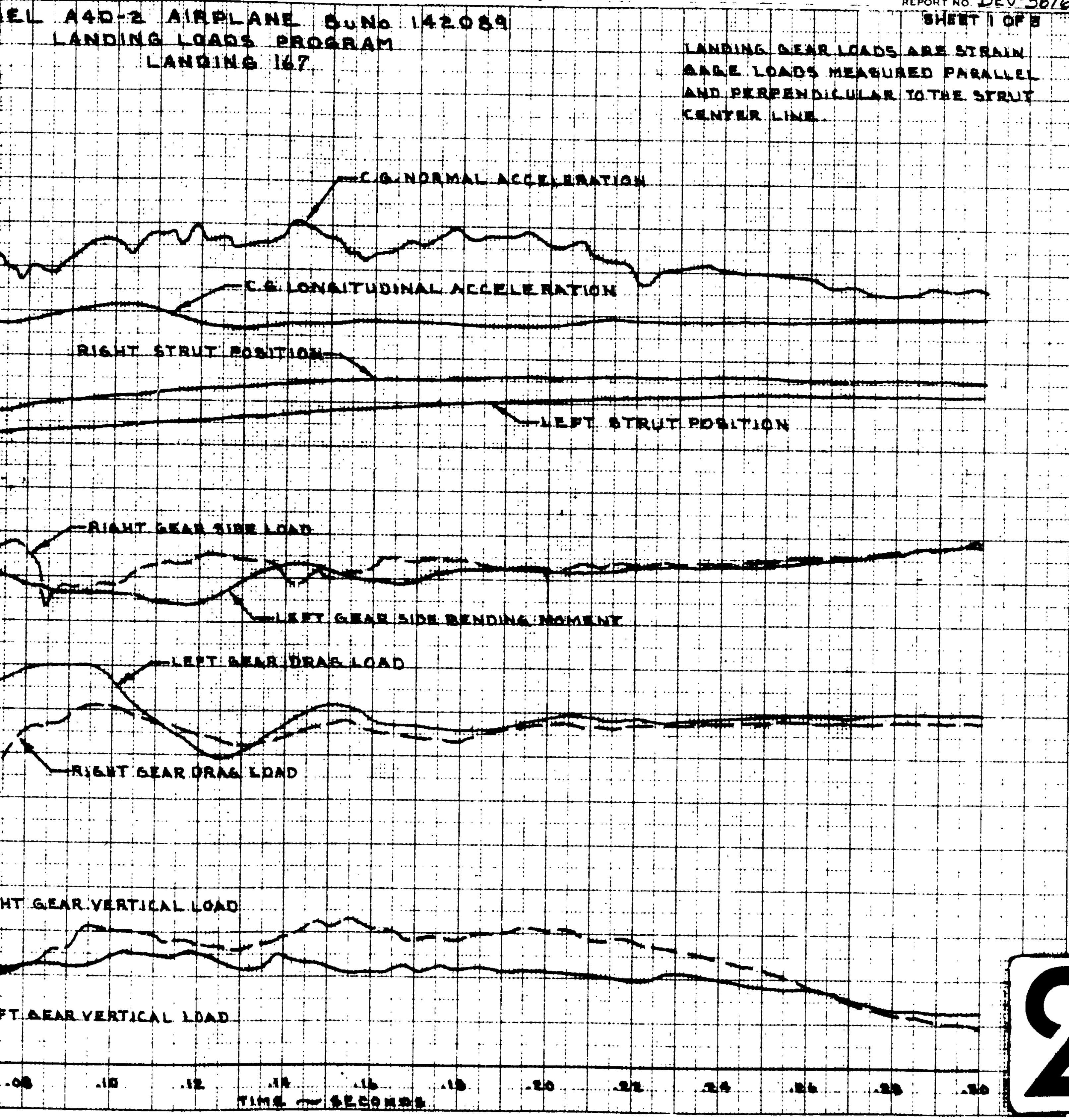
2

FORM 25 [illegible]
(REV. 7-51)

PREPARED
CHECKED
DATE
TITLE

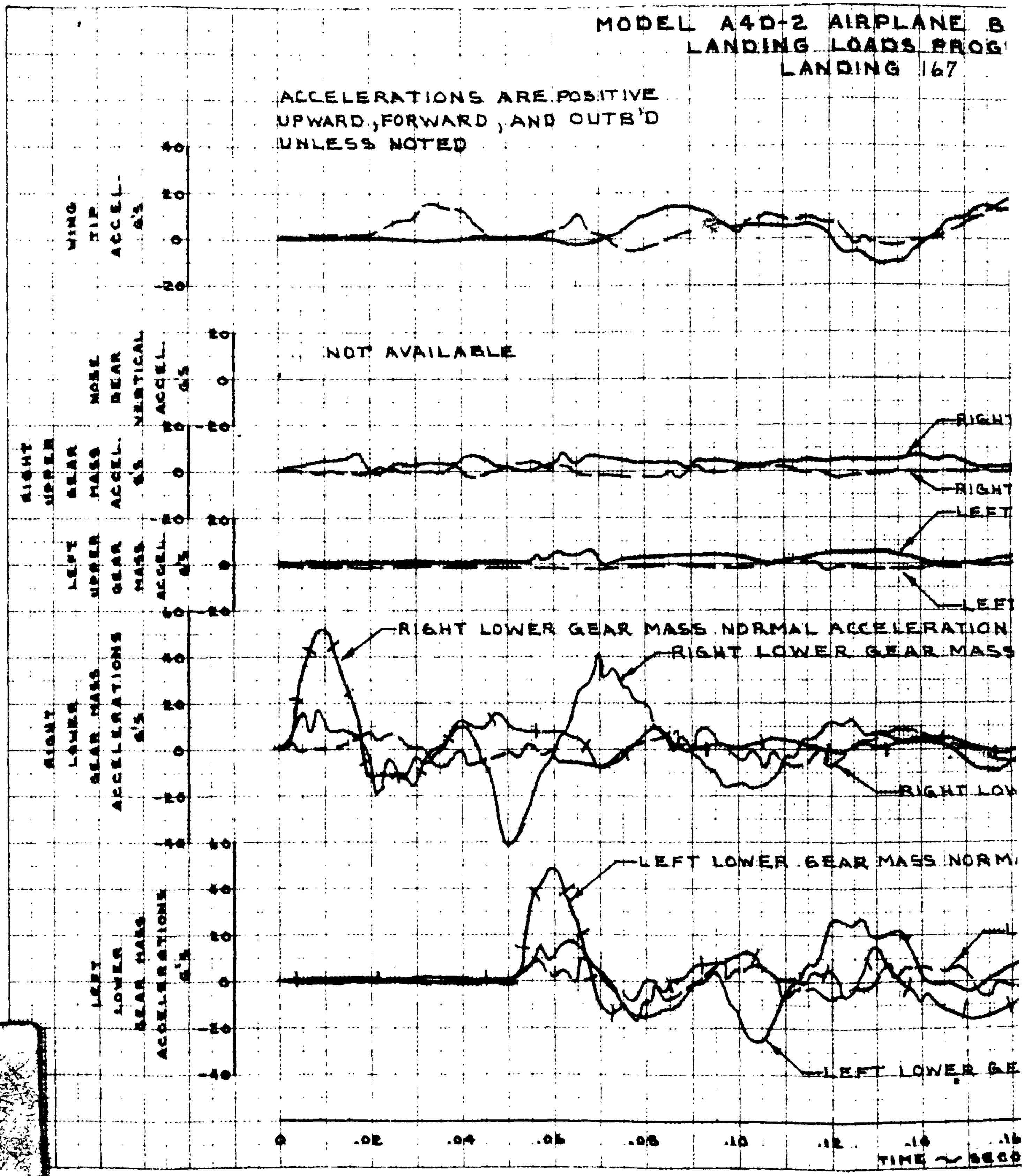


1


SHEET 1 OF 3
EL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 167
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE.
C.G. NORMAL ACCELERATION
C.G. LONGITUDINAL ACCELERATION
RIGHT STRUT POSITION
LEFT STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
HT GEAR VERTICAL LOAD
FT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME — SECONDS

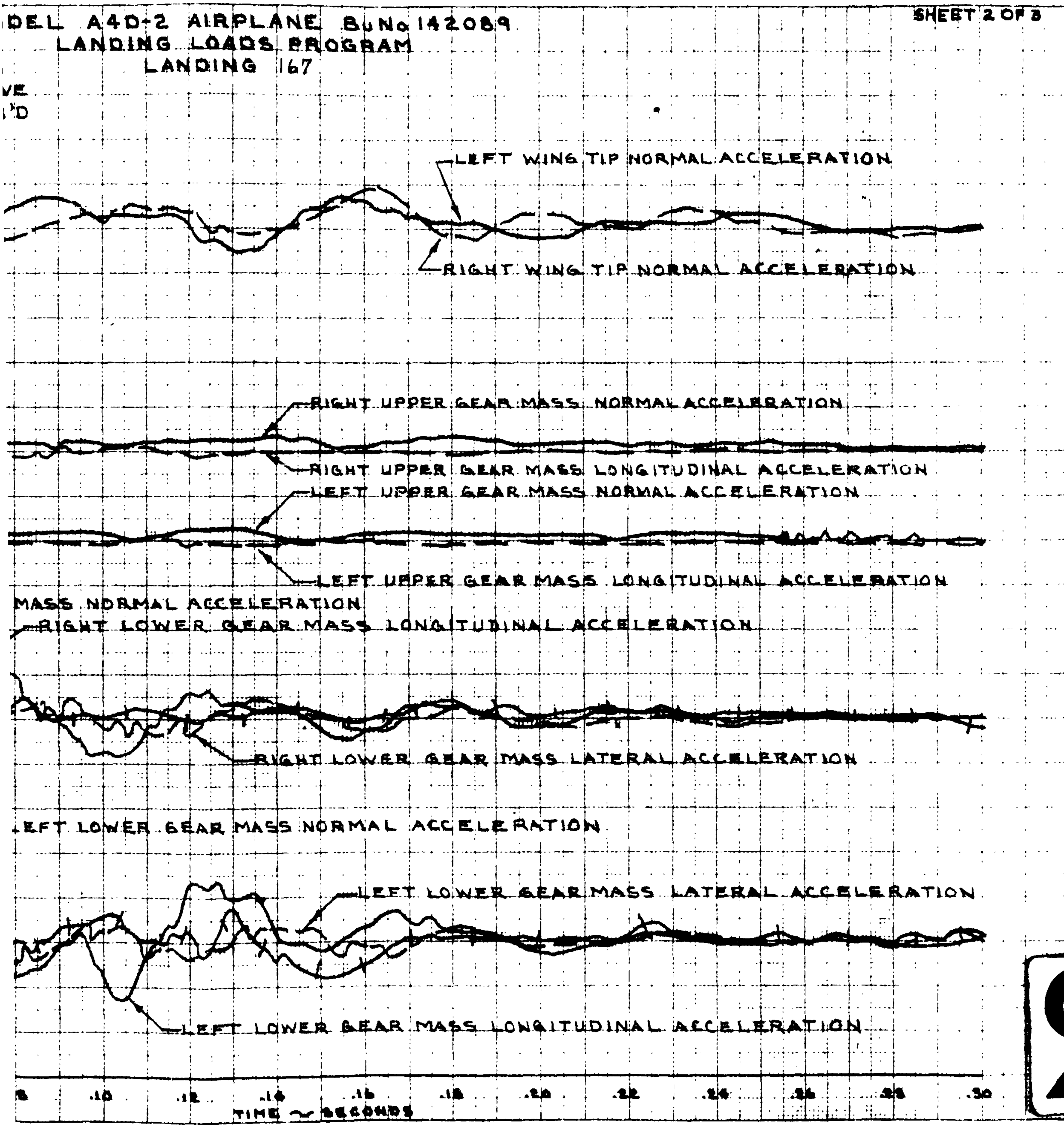
FORM 28 ...
(REV 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



16

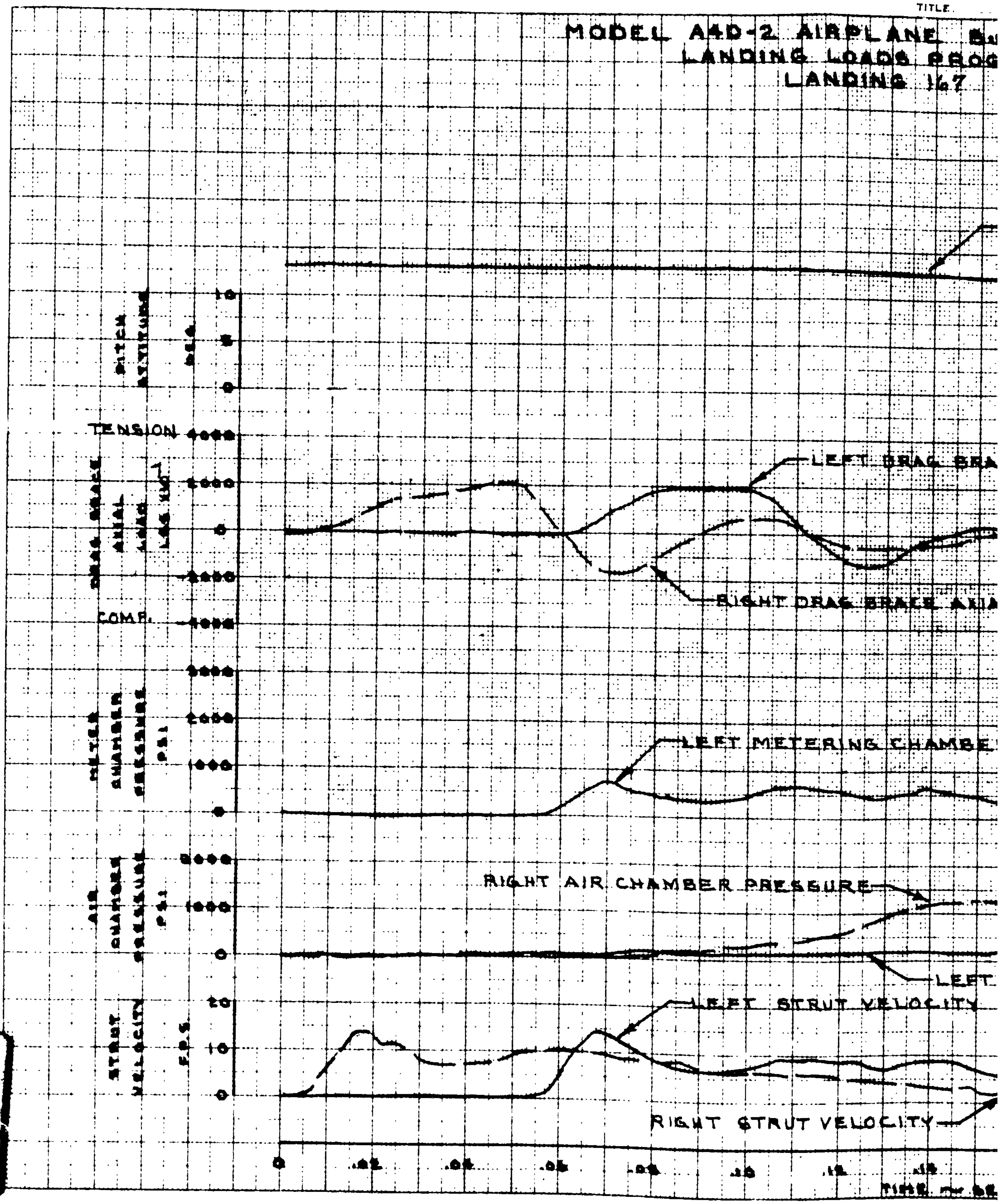
1


DEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 167
VE
'D
LEFT WING TIP NORMAL ACCELERATION
RIGHT WING TIP NORMAL ACCELERATION
RIGHT UPPER GEAR MASS NORMAL ACCELERATION
RIGHT UPPER GEAR MASS LONGITUDINAL ACCELERATION
LEFT UPPER GEAR MASS NORMAL ACCELERATION
LEFT UPPER GEAR MASS LONGITUDINAL ACCELERATION
MASS NORMAL ACCELERATION
RIGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION
RIGHT LOWER GEAR MASS LATERAL ACCELERATION
LEFT LOWER GEAR MASS NORMAL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
LEFT LOWER GEAR MASS LONGITUDINAL ACCELERATION
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

2

FORM 25 UP 1
(REV. 7 54)

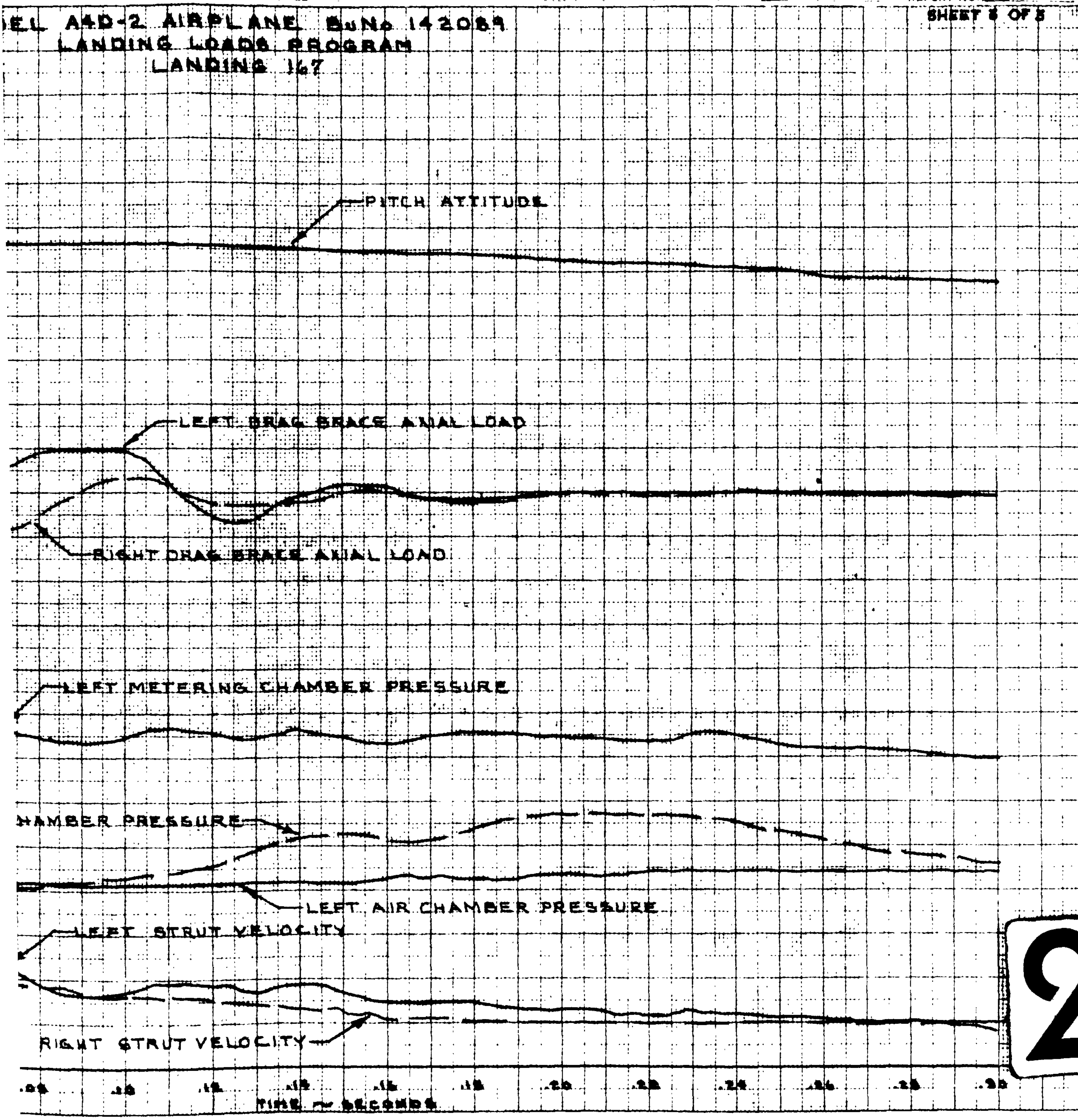
PREPARED BY
CHECKED BY
DATE
TITLE



K+E

36

1

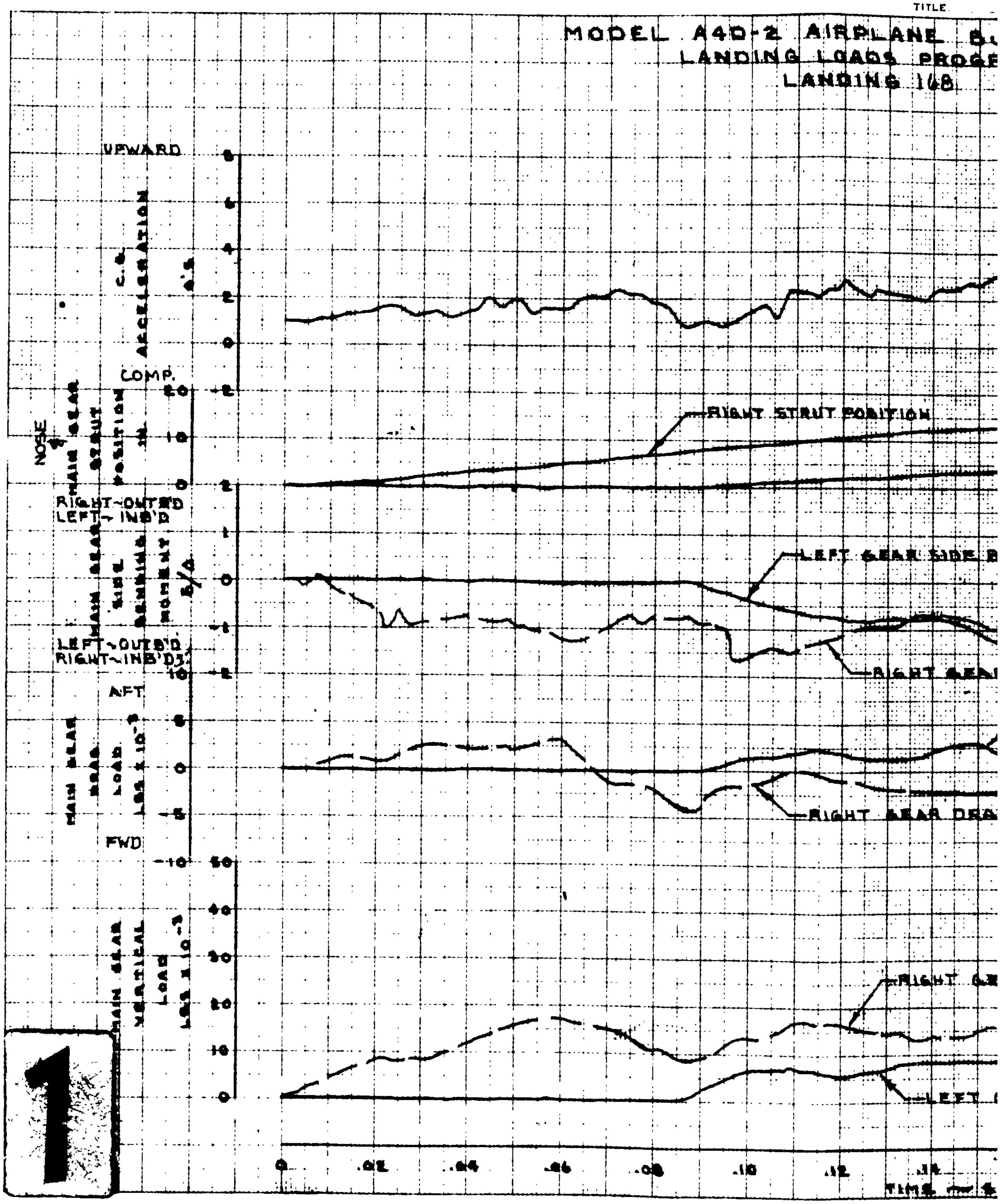


EL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 167
PITCH ATTITUDE
LEFT DRAG BRACE AXIAL LOAD
RIGHT DRAG BRACE AXIAL LOAD
LEFT METERING CHAMBER PRESSURE
HAMBER PRESSURE
LEFT AIR CHAMBER PRESSURE
LEFT STRUT VELOCITY
RIGHT STRUT VELOCITY
TIME ~ SECONDS

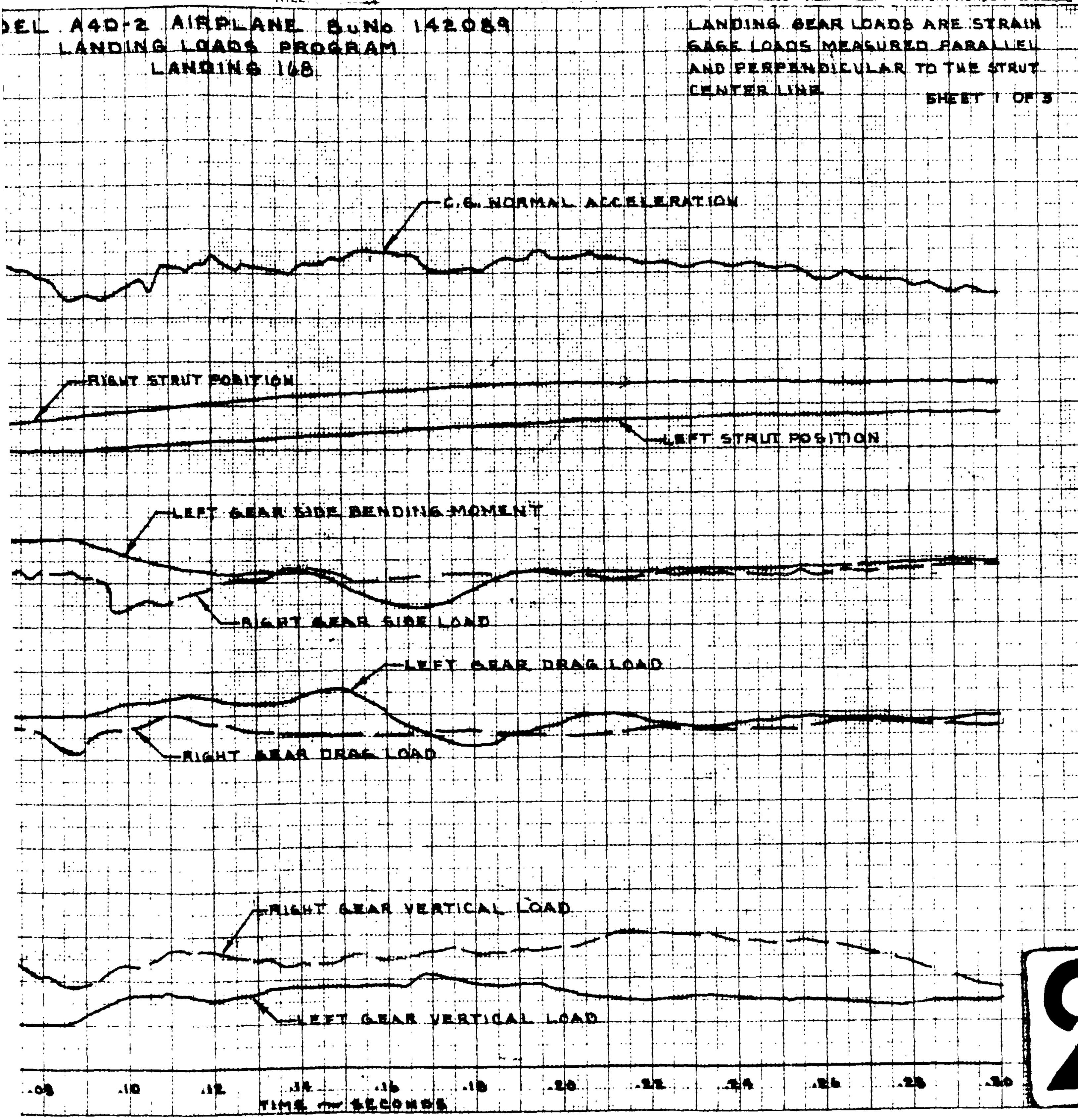
2

FORM 25 (?)
REV. (?)

PREPARED BY
CHECKED BY
DATE
TITLE

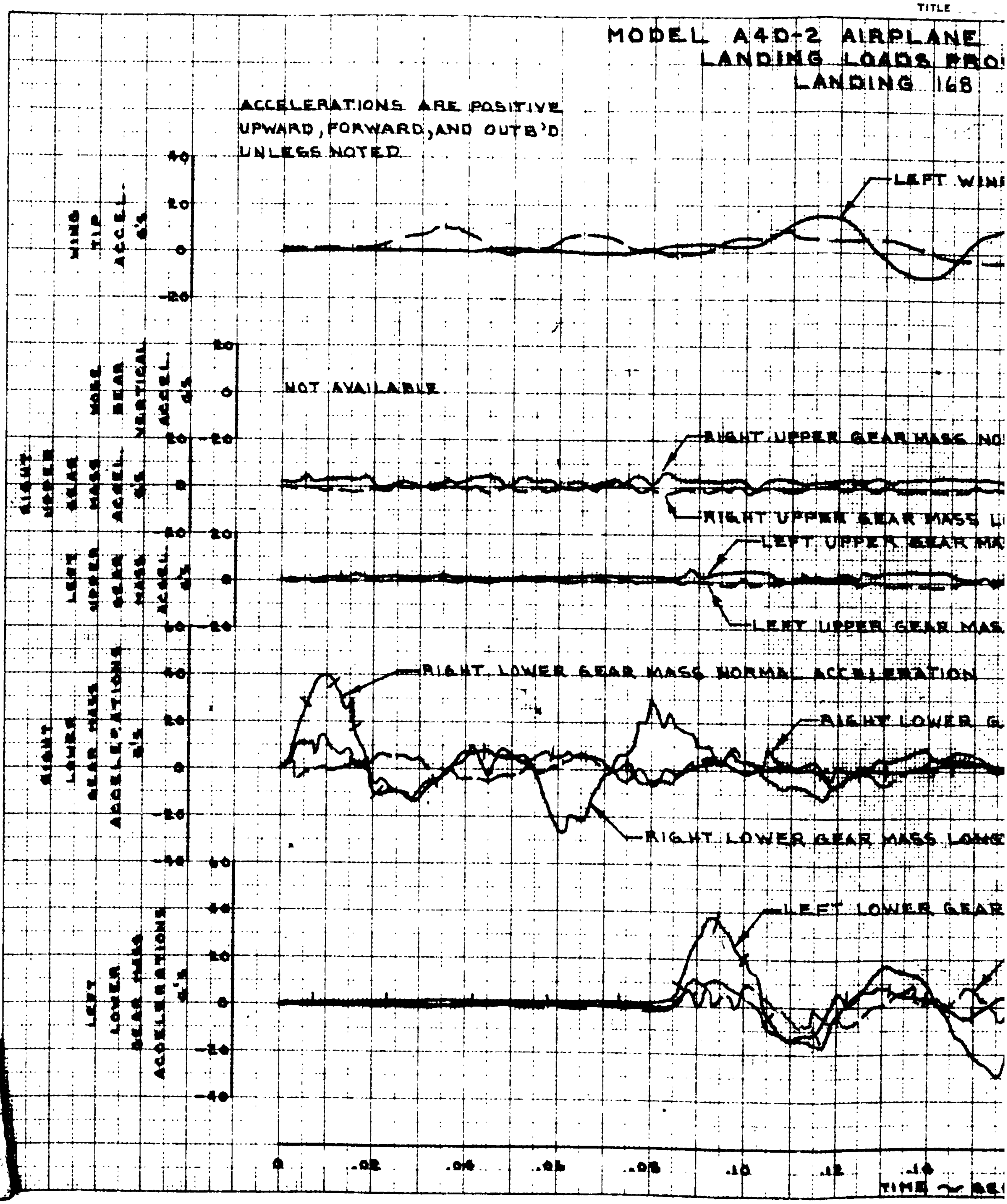


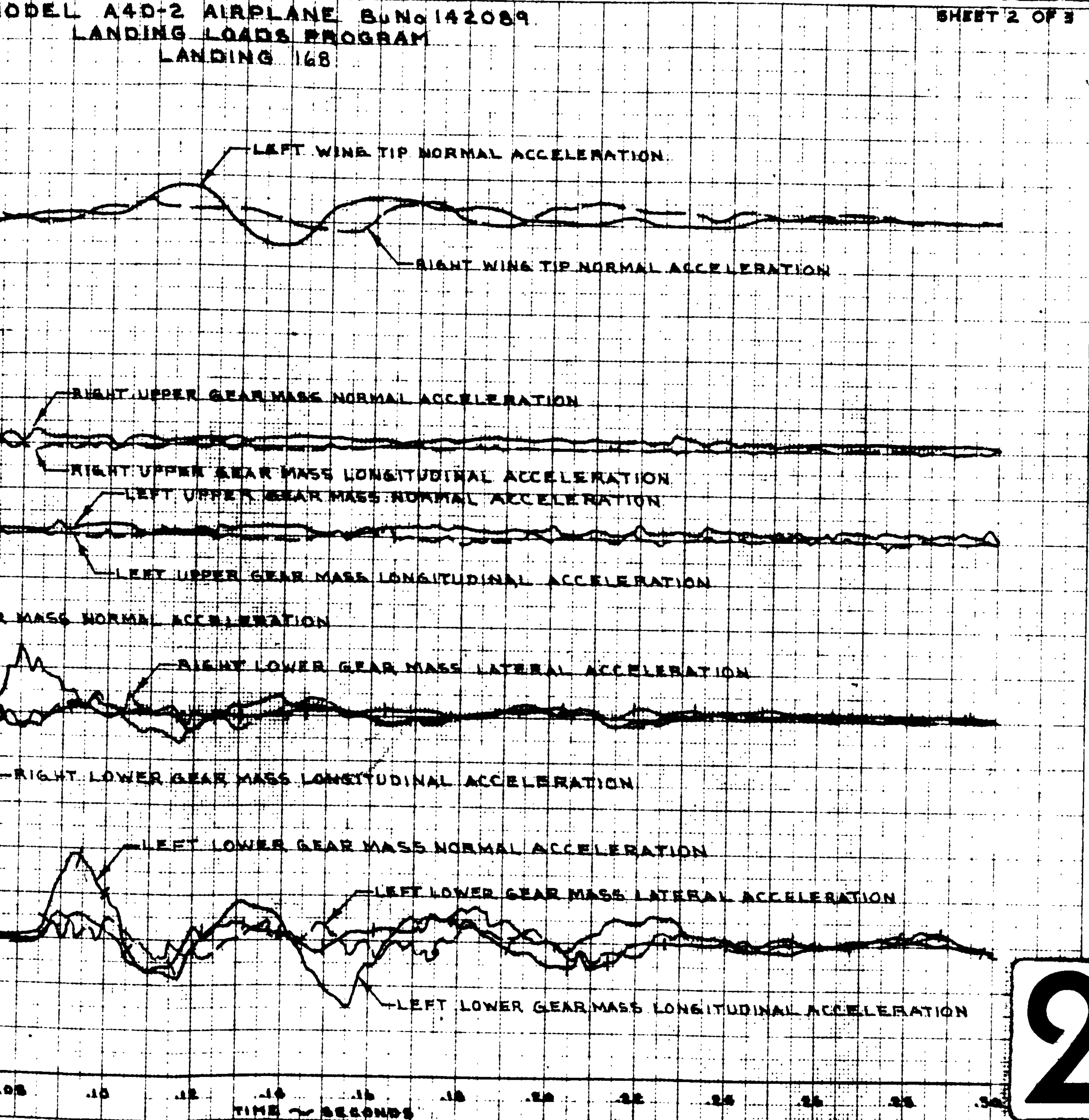
1


DEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 168
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE
SHEET 1 OF 3
C.G. NORMAL ACCELERATION
RIGHT STRUT POSITION
LEFT STRUT POSITION
LEFT GEAR SIDE BENDING MOMENT
RIGHT GEAR SIDE LOAD
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
RIGHT GEAR VERTICAL LOAD
LEFT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME — SECONDS

2

PREPARED BY
CHECKED BY
DATE
TITLE

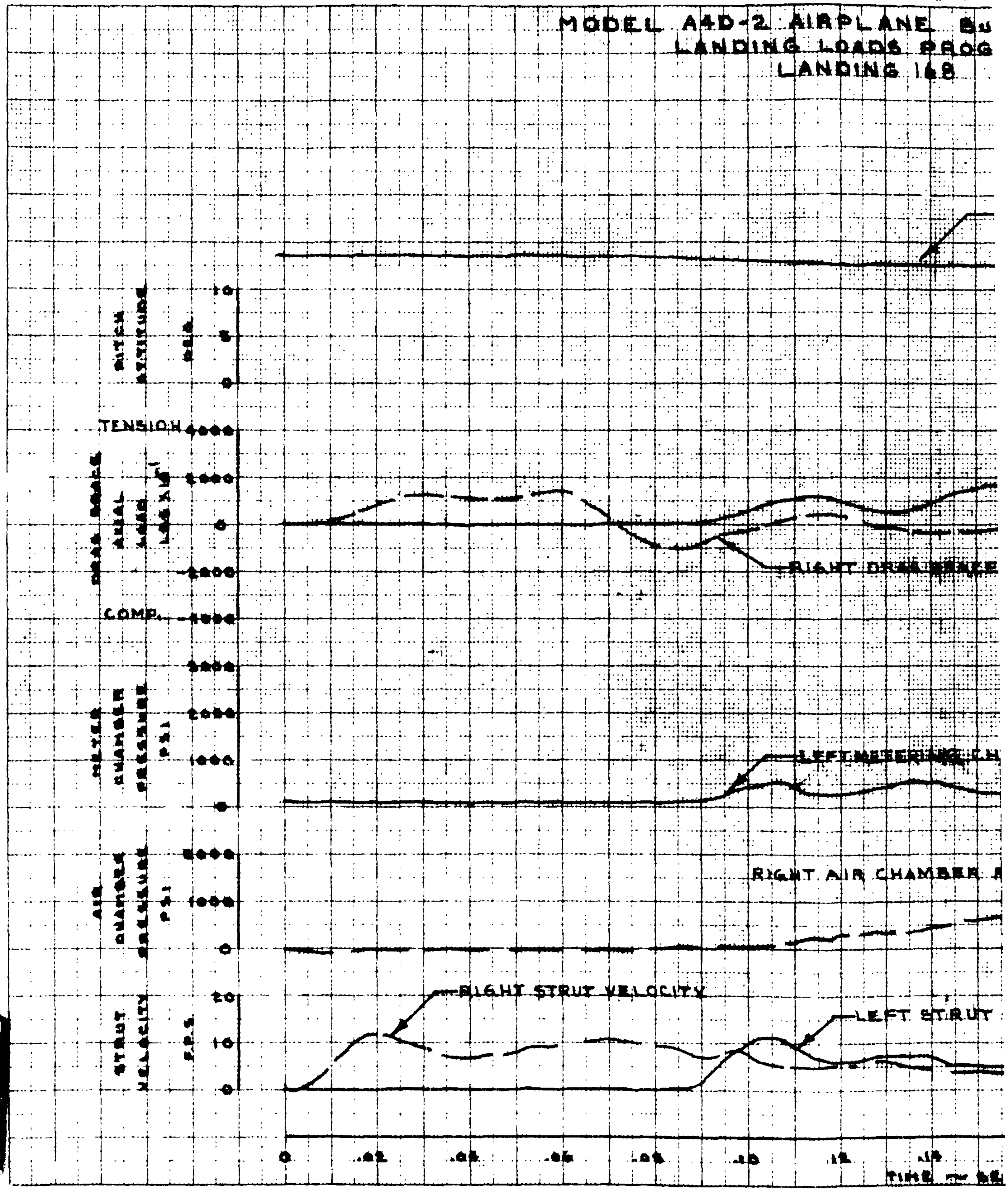



MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 168
SHEET 2 OF 3
LEFT WING TIP NORMAL ACCELERATION
RIGHT WING TIP NORMAL ACCELERATION
RIGHT UPPER GEAR MASS NORMAL ACCELERATION
RIGHT UPPER GEAR MASS LONGITUDINAL ACCELERATION
LEFT UPPER GEAR MASS NORMAL ACCELERATION
LEFT UPPER GEAR MASS LONGITUDINAL ACCELERATION
MASS NORMAL ACCELERATION
RIGHT LOWER GEAR MASS LATERAL ACCELERATION
RIGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION
LEFT LOWER GEAR MASS NORMAL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
LEFT LOWER GEAR MASS LONGITUDINAL ACCELERATION
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

2

FORM 25 (?)
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



K·E

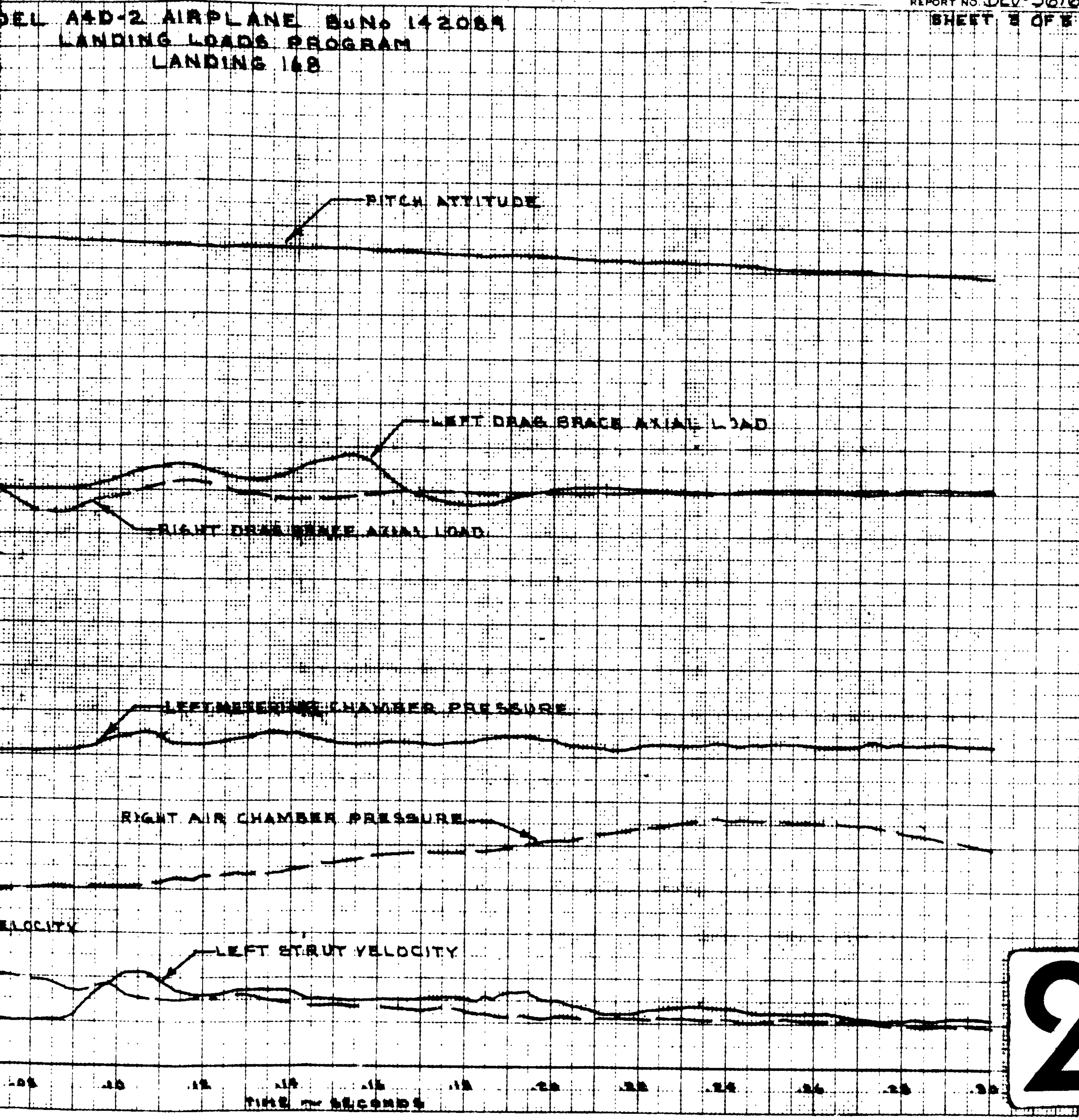
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

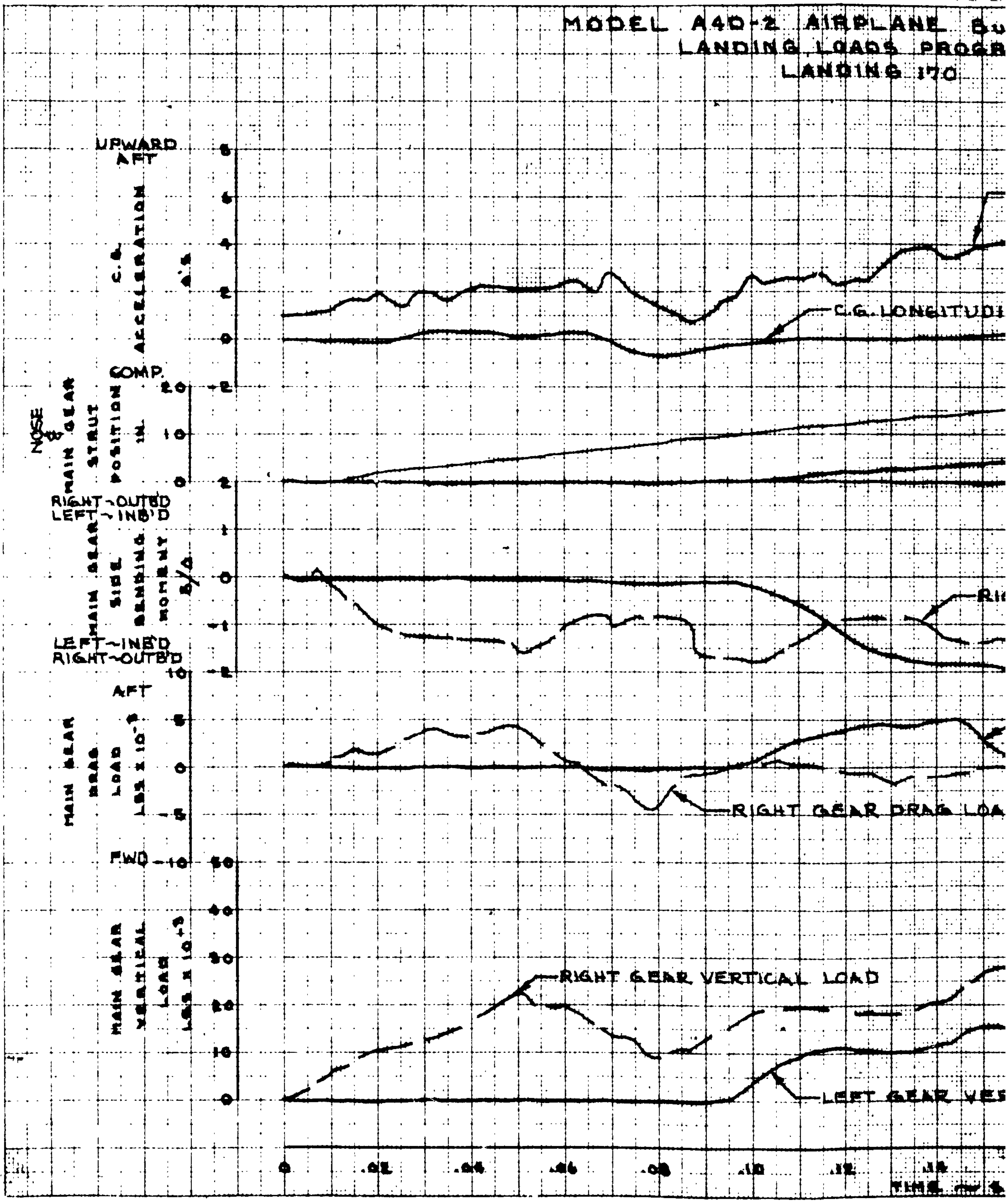
PAGE 8.4.72
MODEL A4D-2
REPORT NO. DEV-3616



2

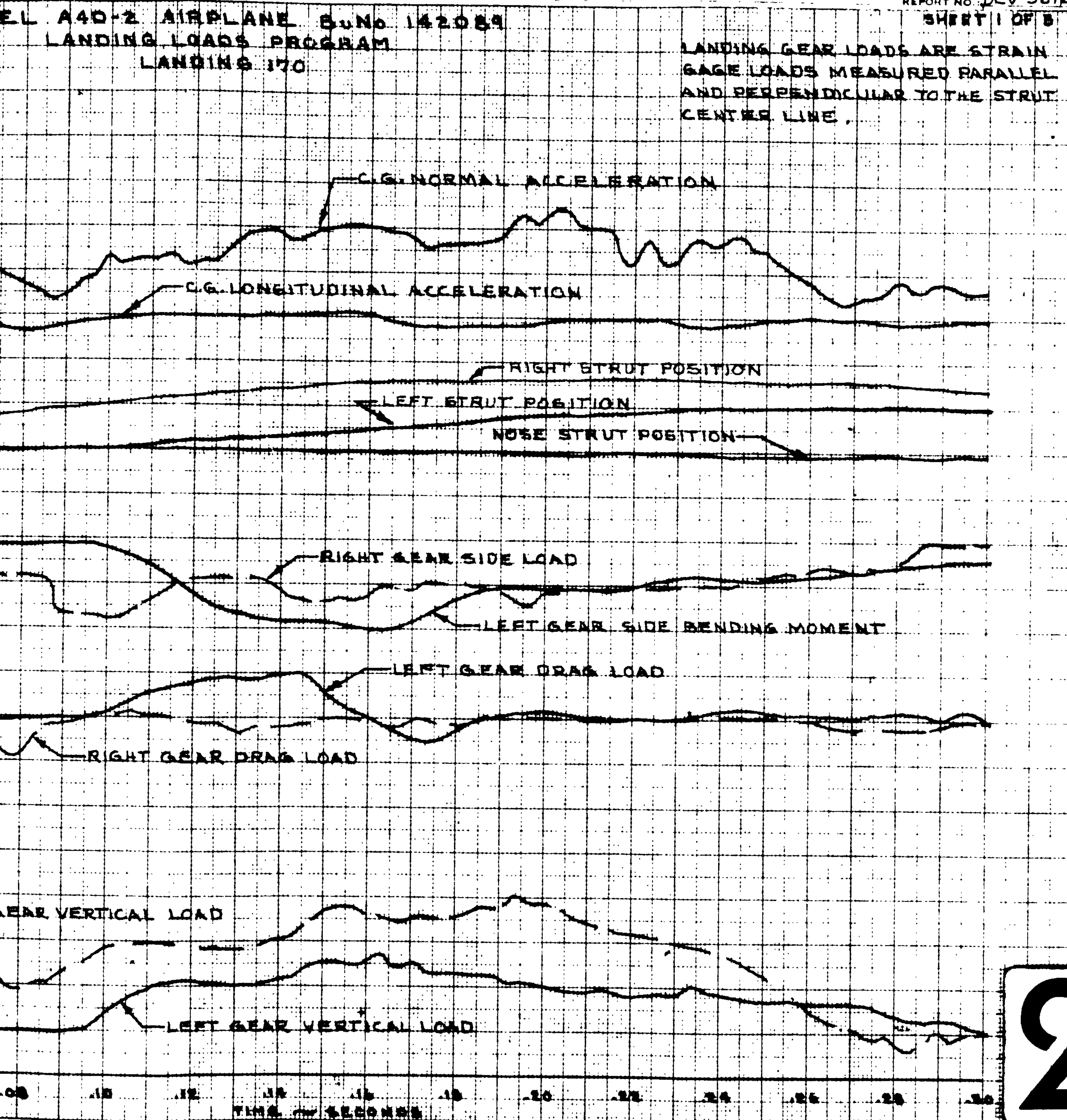
FORM 25 DP 1
REV 7-41

PREPARED BY
CHECKED BY
DATE
TITLE



K-E

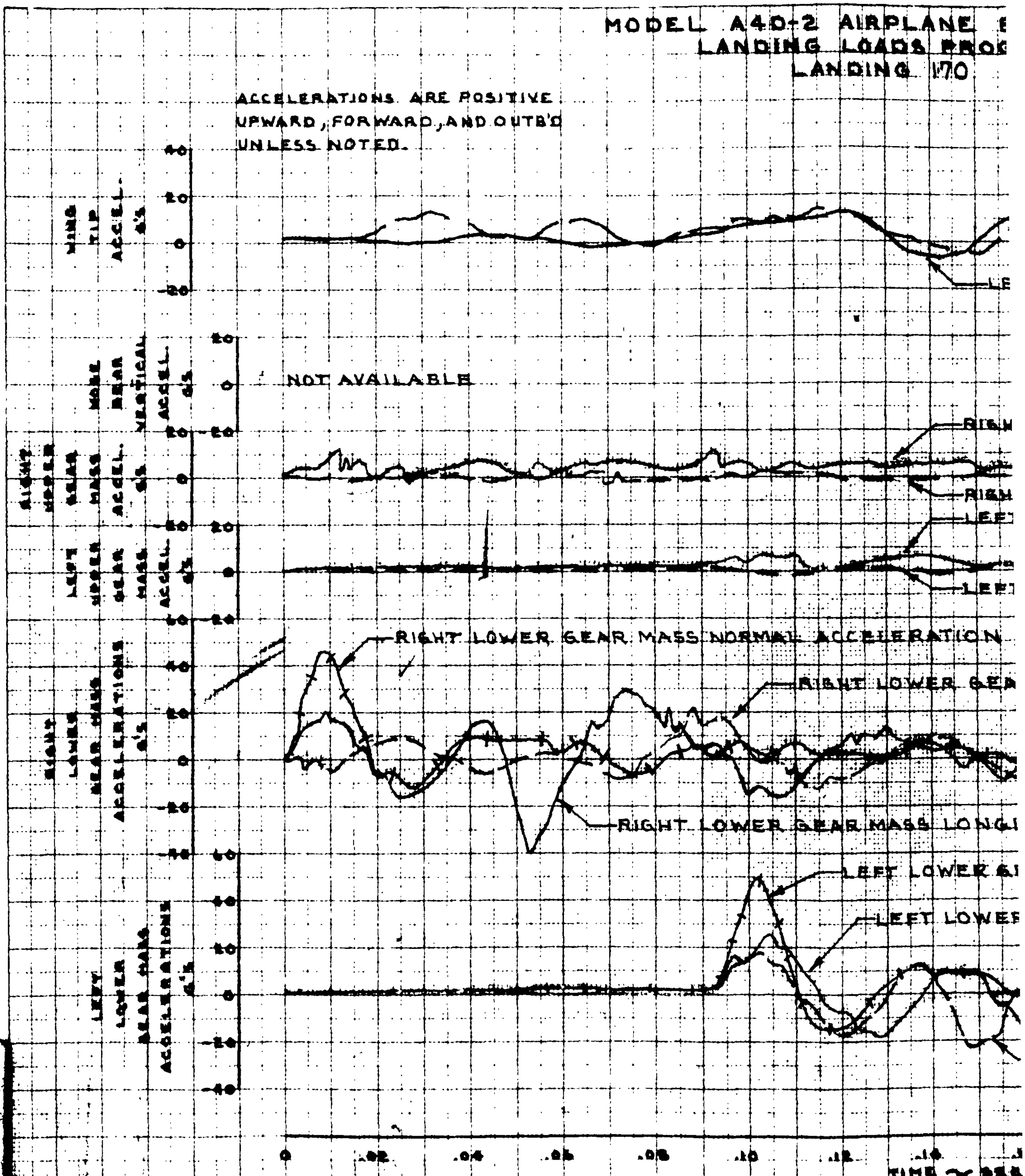
1


EL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 170
SHEET 1 OF 3
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE.
C.G. NORMAL ACCELERATION
C.G. LONGITUDINAL ACCELERATION
RIGHT STRUT POSITION
LEFT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
EAR VERTICAL LOAD
LEFT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

2

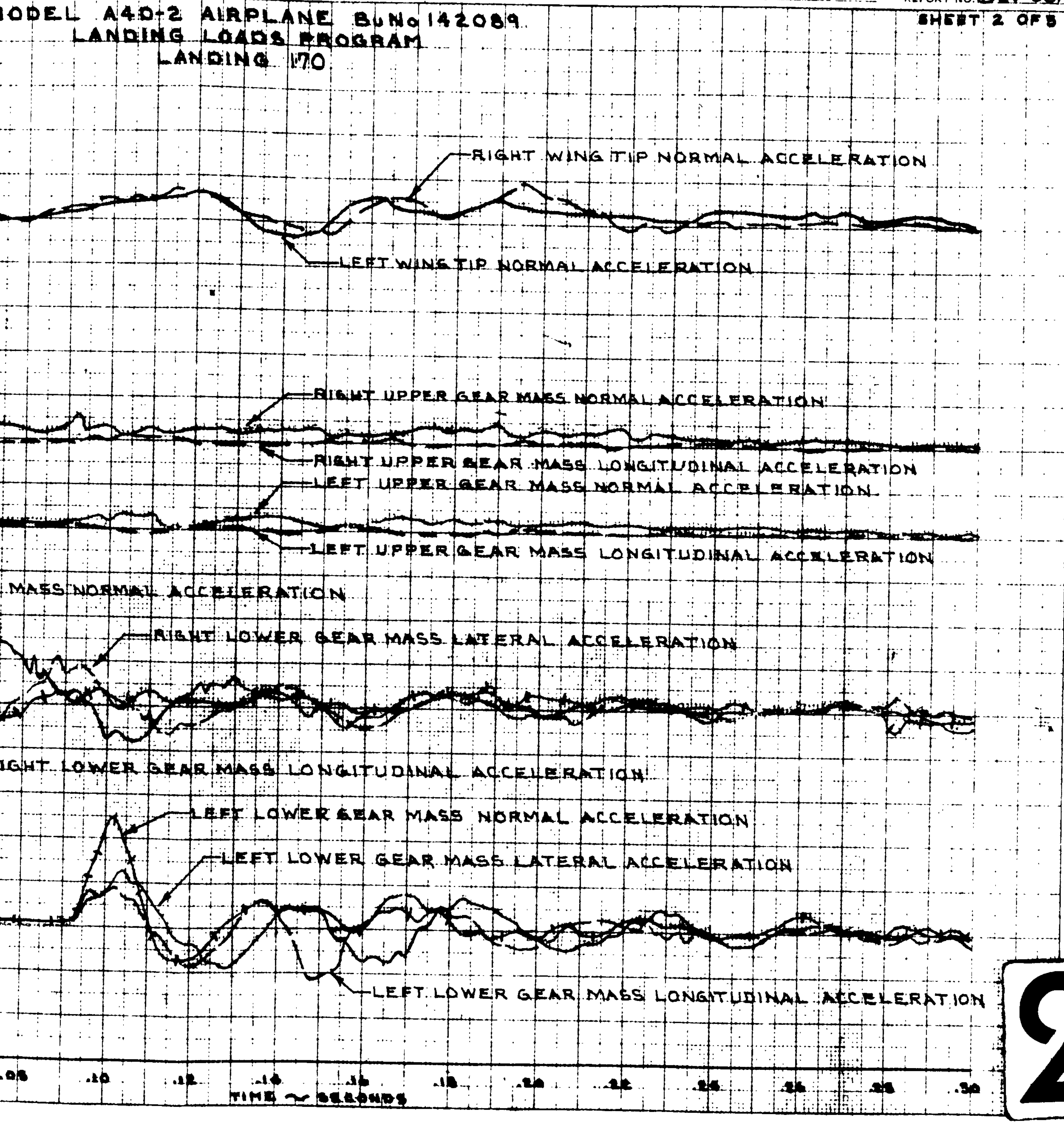
FORM 28 BP 1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



K-E ALBANENE

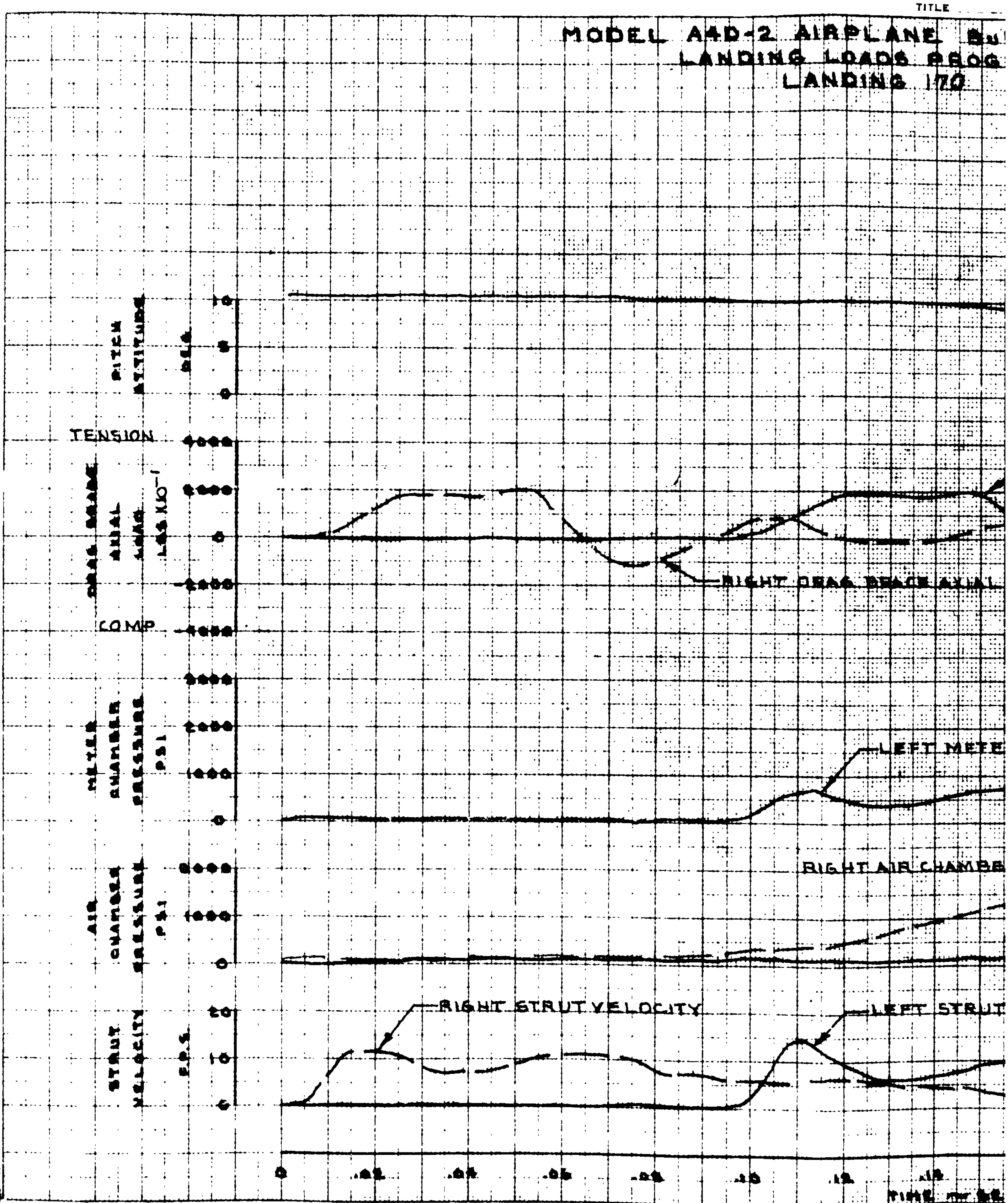
1


MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 170
SHEET 2 OF 5
RIGHT WING TIP NORMAL ACCELERATION
LEFT WING TIP NORMAL ACCELERATION
RIGHT UPPER GEAR MASS NORMAL ACCELERATION
RIGHT UPPER GEAR MASS LONGITUDINAL ACCELERATION
LEFT UPPER GEAR MASS NORMAL ACCELERATION
LEFT UPPER GEAR MASS LONGITUDINAL ACCELERATION
MASS NORMAL ACCELERATION
RIGHT LOWER GEAR MASS LATERAL ACCELERATION
IGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION
LEFT LOWER GEAR MASS NORMAL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
LEFT LOWER GEAR MASS LONGITUDINAL ACCELERATION
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

2

FORM ...
(REV ...)

PREPARED BY
CHECKED BY
DATE
TITLE



K-E

56

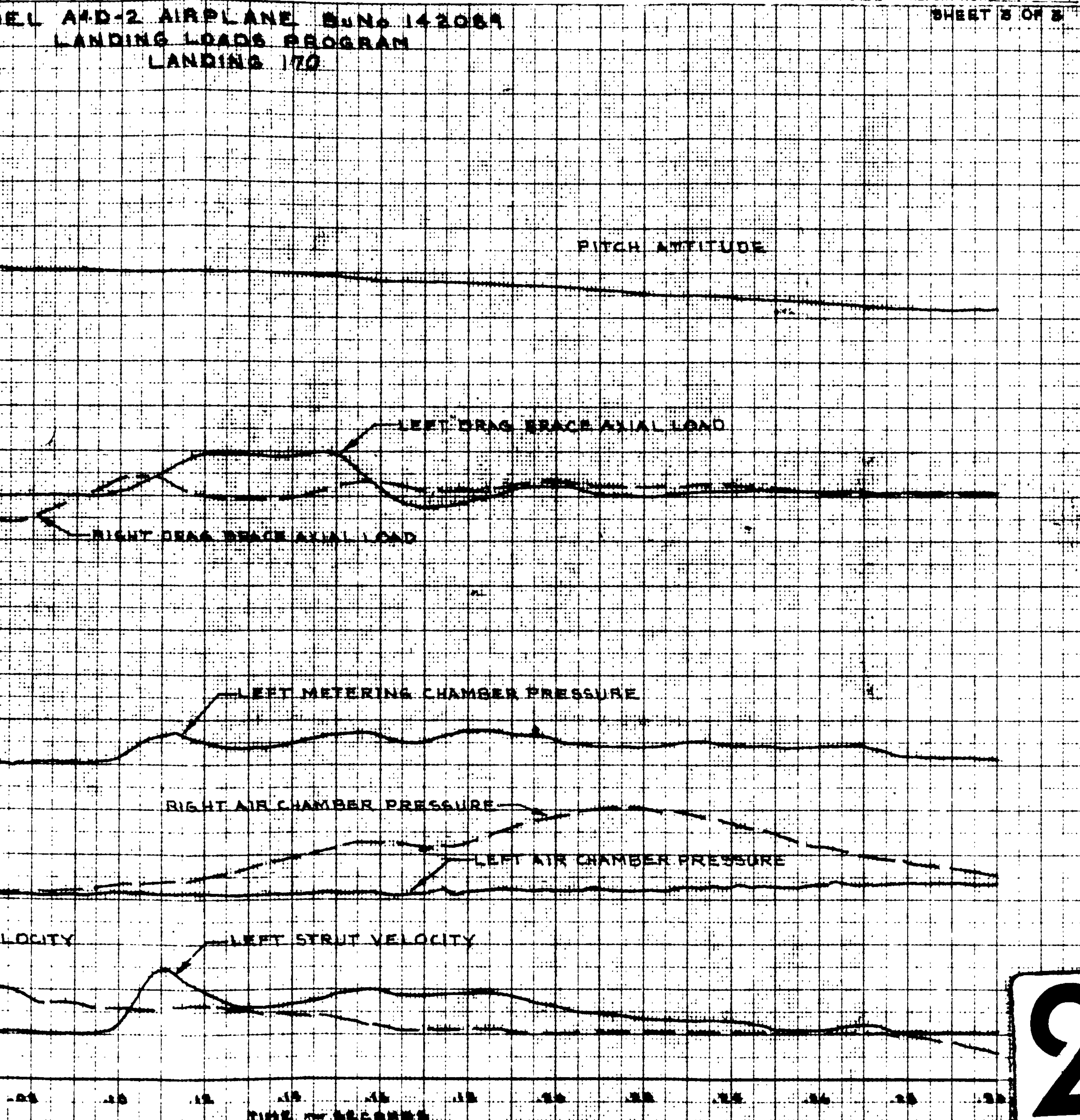
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

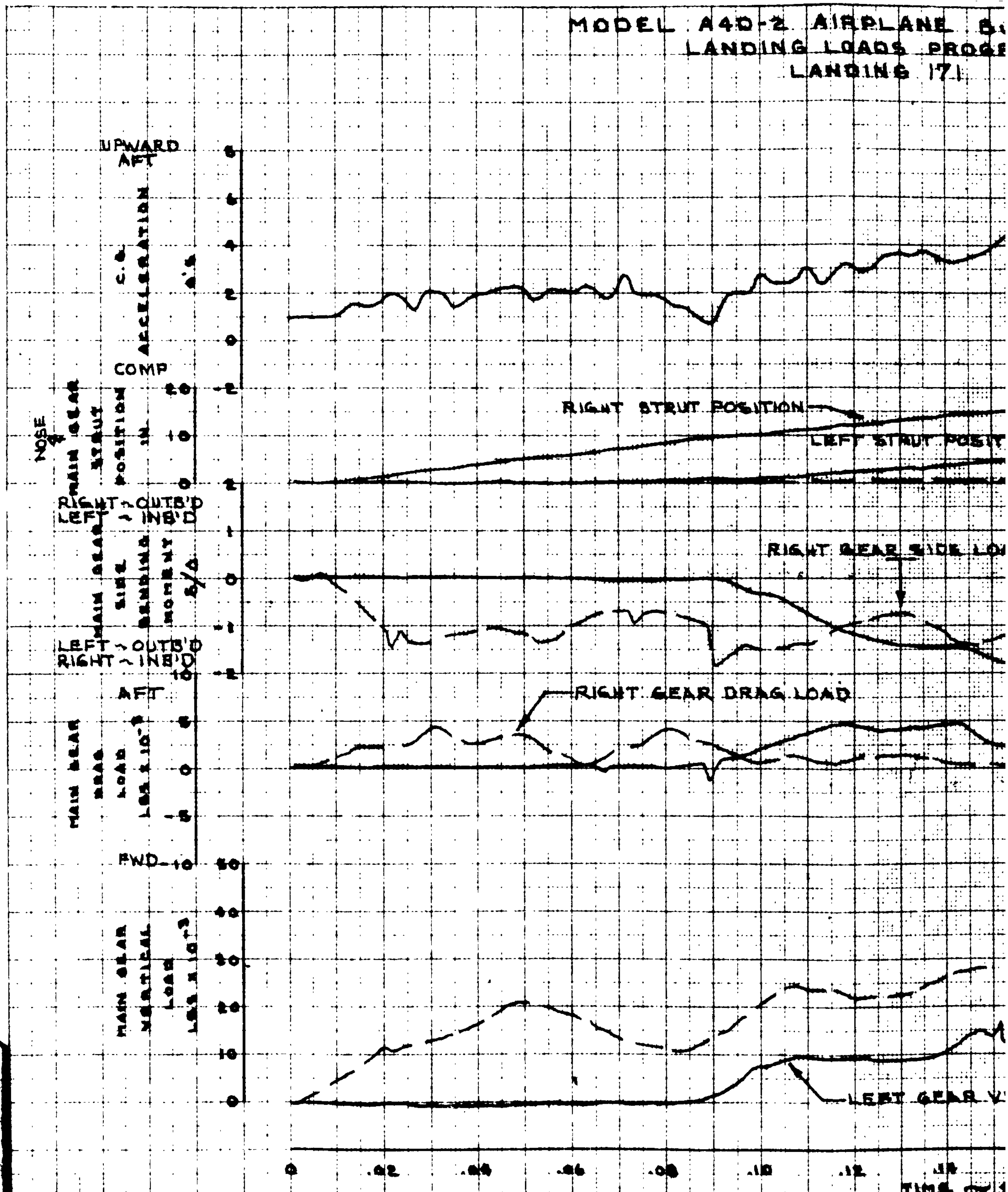
PAGE 8.4.75
MODEL A4D-2
REPORT NO. DEV-3616



2

FORM 25 ... REV 7-54

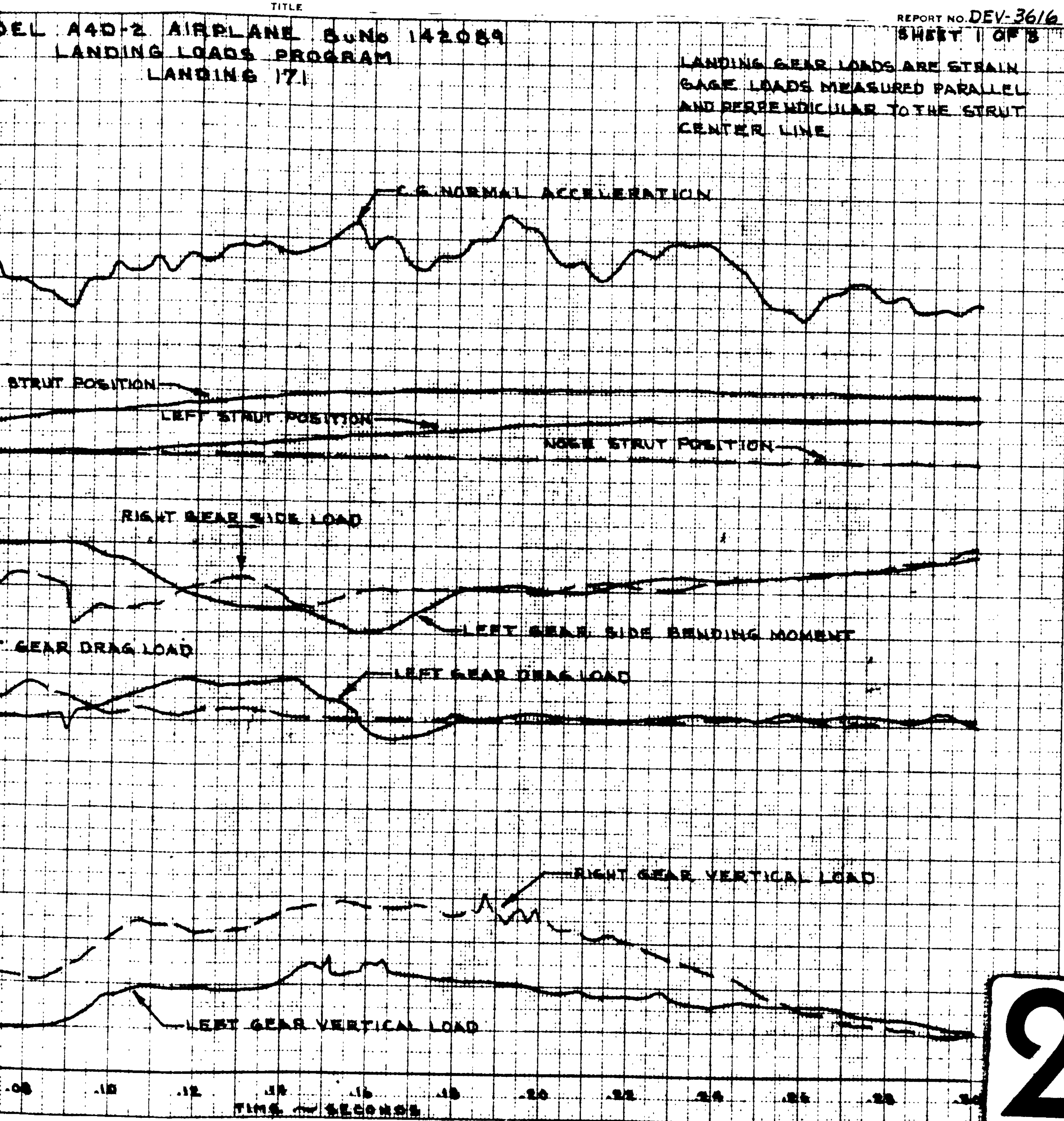
PREPARED BY
CHECKED BY
DATE
TITLE



66

1

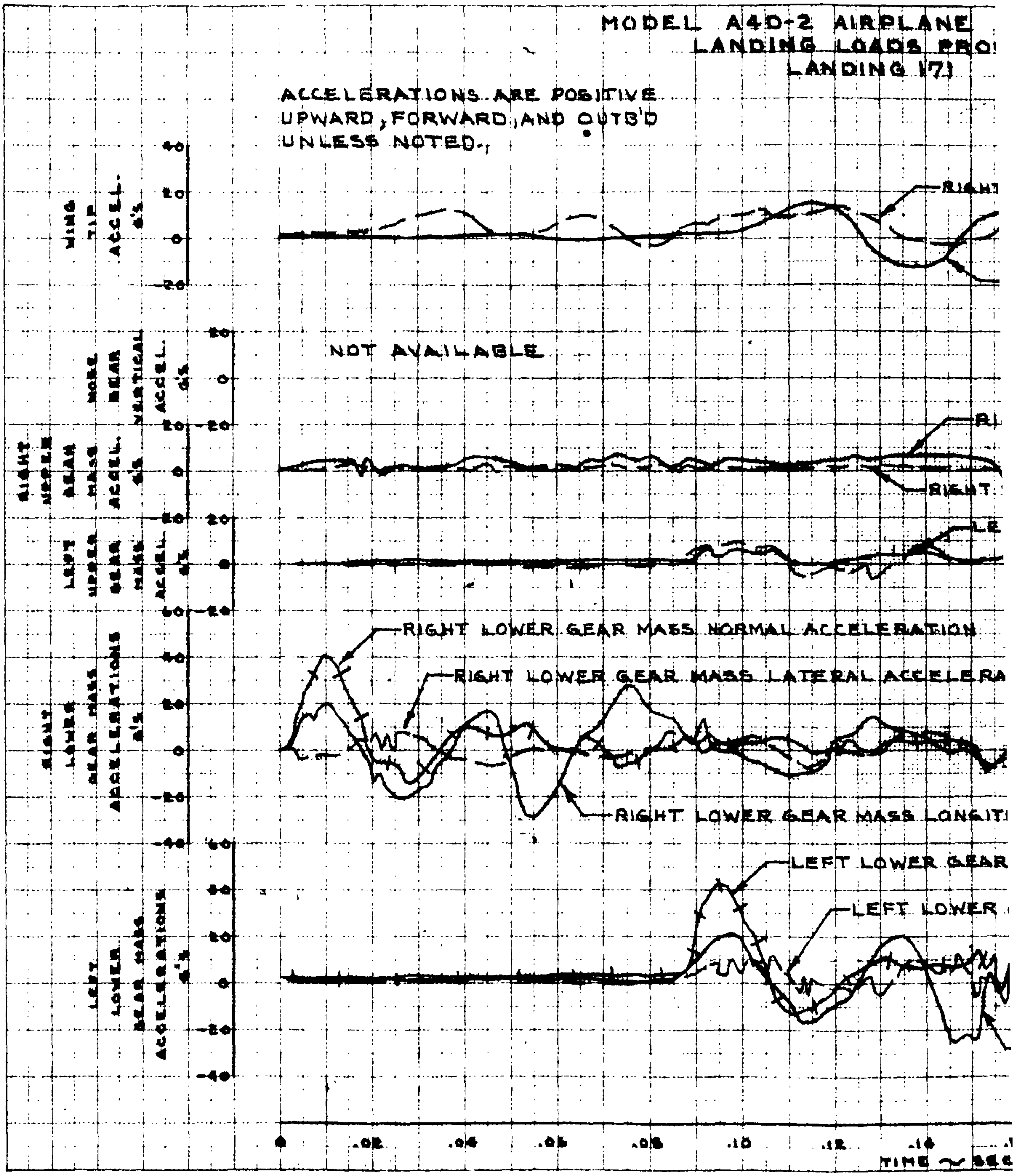
K•E

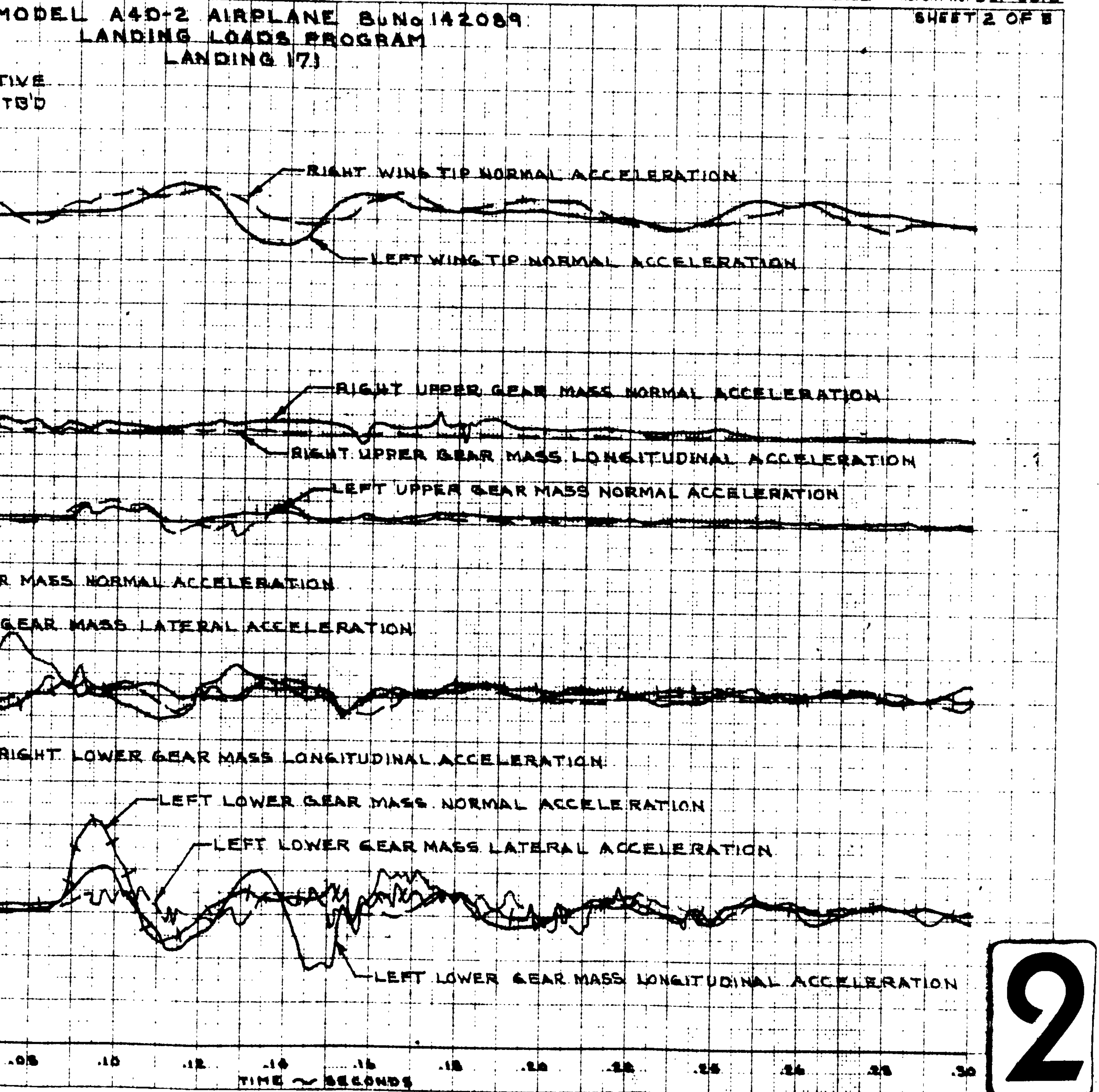

SHEET 1 OF 3
...DEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 171
LANDING GEAR LOADS ARE STRAIN GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE
C.G. NORMAL ACCELERATION
...STRUT POSITION
LEFT STRUT POSITION
NOSE STRUT POSITION
RIGHT GEAR SIDE LOAD
LEFT GEAR SIDE BENDING MOMENT
...T GEAR DRAG LOAD
LEFT GEAR DRAG LOAD
RIGHT GEAR VERTICAL LOAD
LEFT GEAR VERTICAL LOAD
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS

2

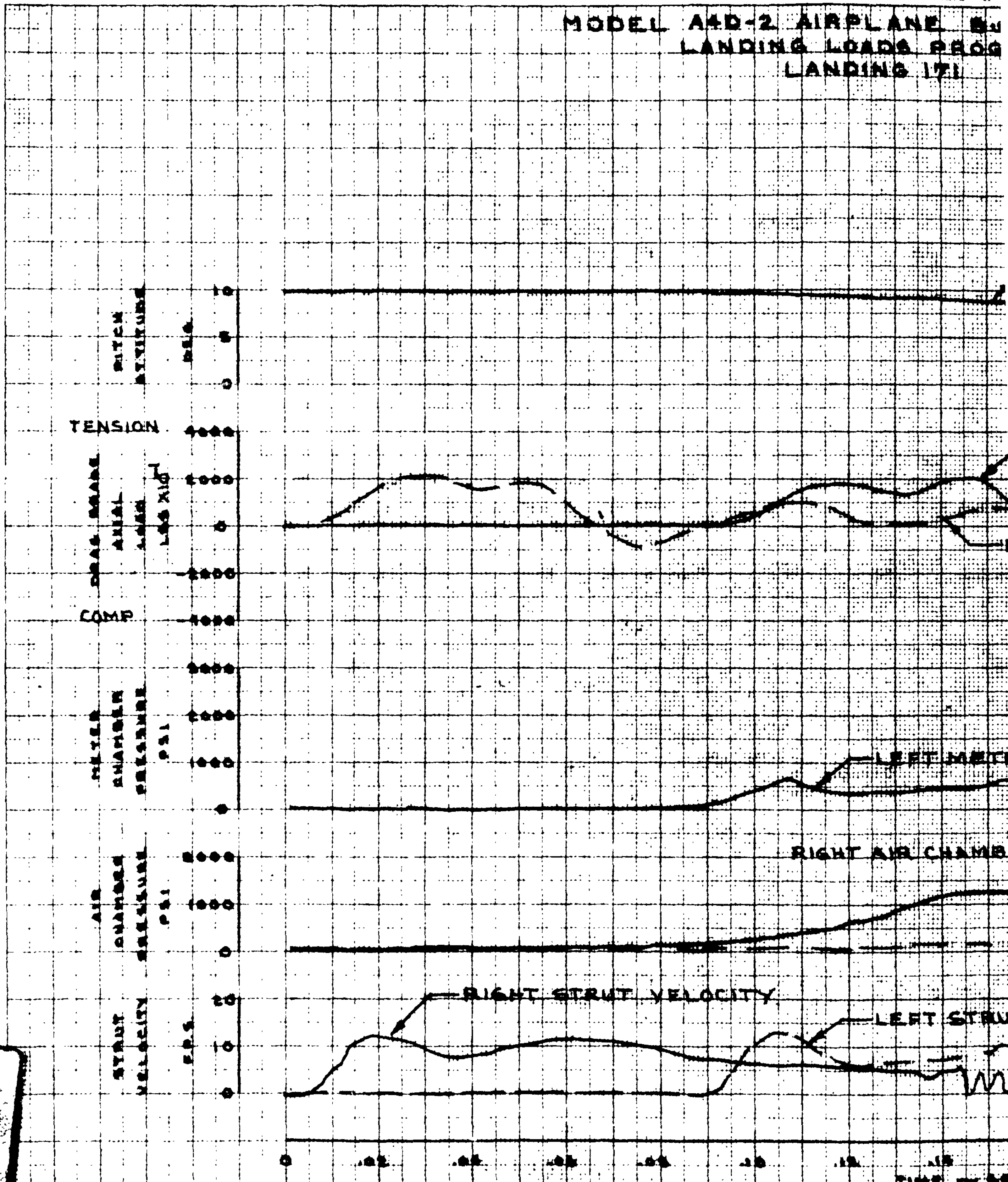
FORM 25 ...
(REV 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE




SHEET 2 OF 8
MODEL A4D-2 AIRPLANE BuNo 142089
LANDING LOADS PROGRAM
LANDING 171
TIVE
TB'D
RIGHT WING TIP NORMAL ACCELERATION
LEFT WING TIP NORMAL ACCELERATION
RIGHT UPPER GEAR MASS NORMAL ACCELERATION
RIGHT UPPER GEAR MASS LONGITUDINAL ACCELERATION
LEFT UPPER GEAR MASS NORMAL ACCELERATION
R MASS NORMAL ACCELERATION
GEAR MASS LATERAL ACCELERATION
RIGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION
LEFT LOWER GEAR MASS NORMAL ACCELERATION
LEFT LOWER GEAR MASS LATERAL ACCELERATION
LEFT LOWER GEAR MASS LONGITUDINAL ACCELERATION
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
TIME ~ SECONDS
2

PREPARED BY
CHECKED BY
DATE
TITLE:



171

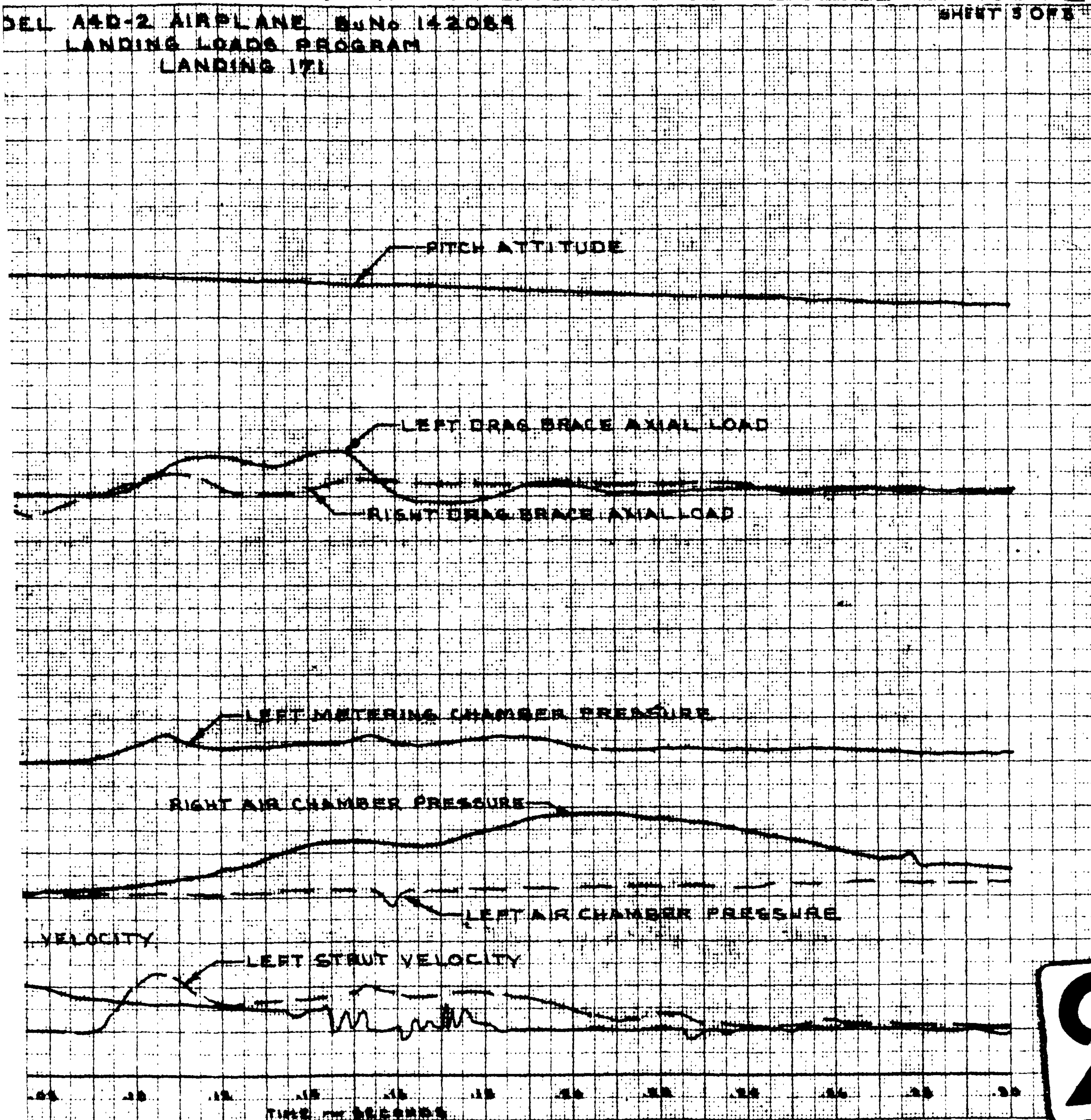
1

PREPARED BY:
CHECKED BY
DATE
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

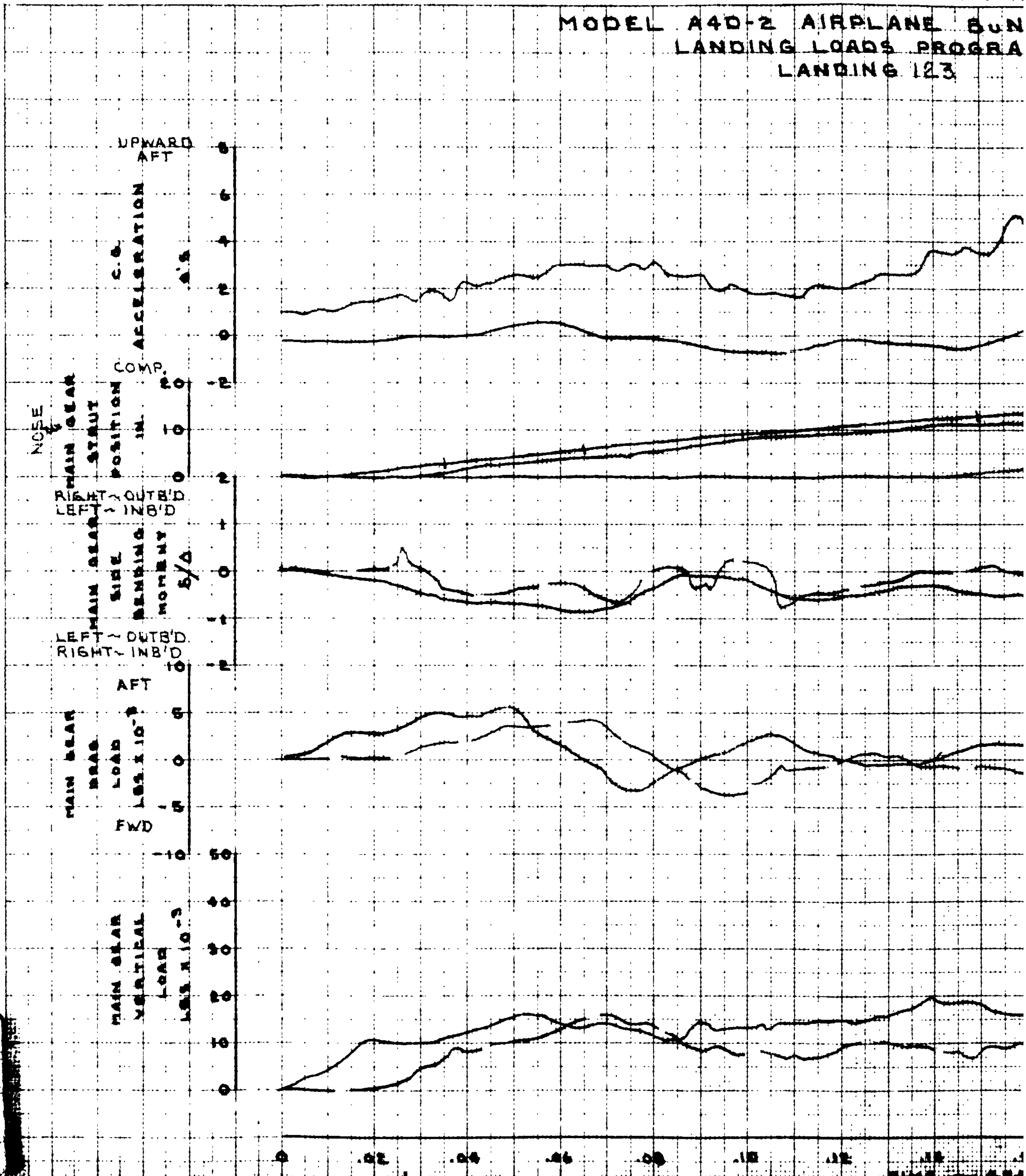
PAGE: 8.4.78
MODEL: A4D-2
REPORT NO. DEV-3616



2

FORM 29 BP 1 (REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE



K-E

201

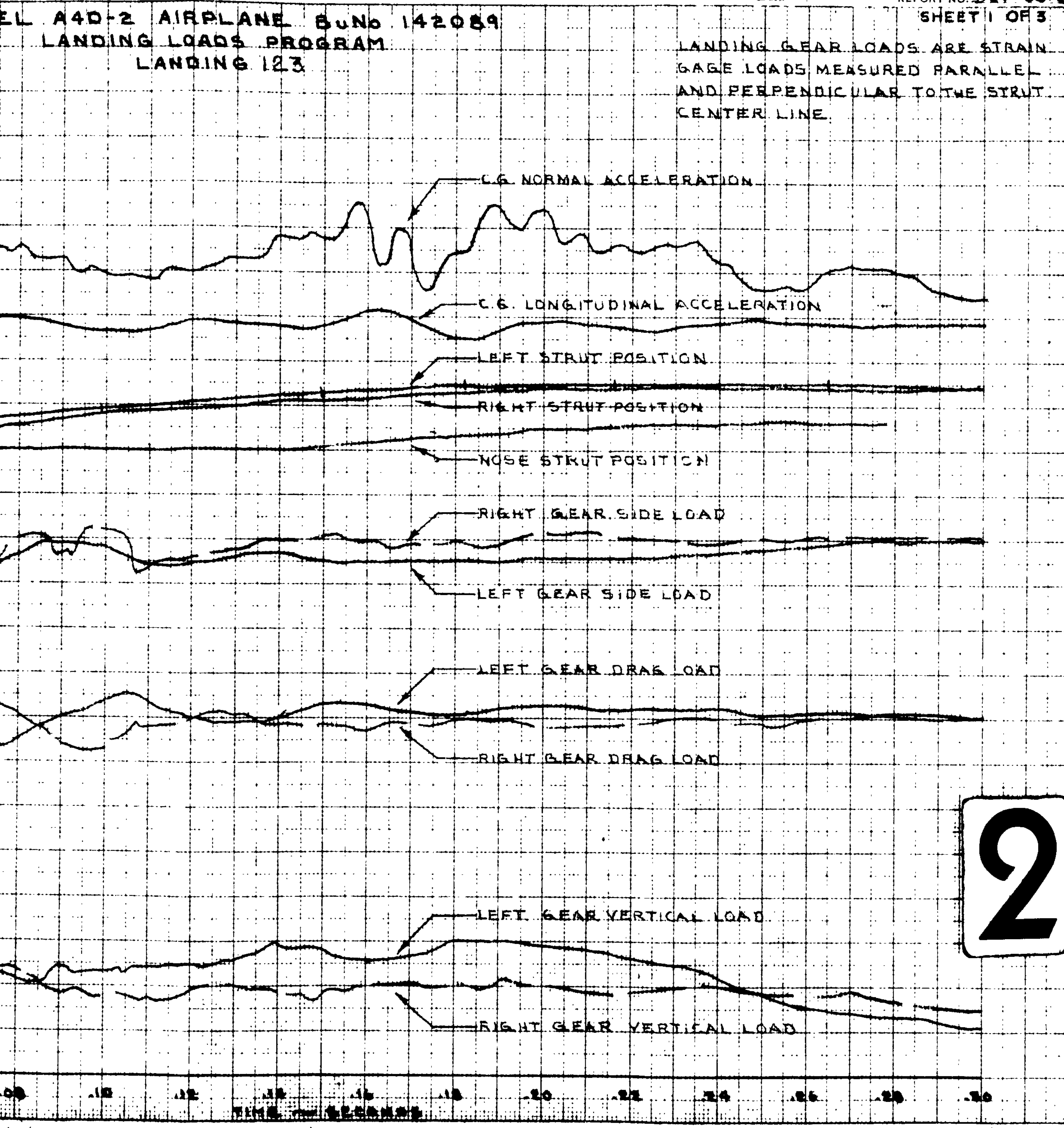
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

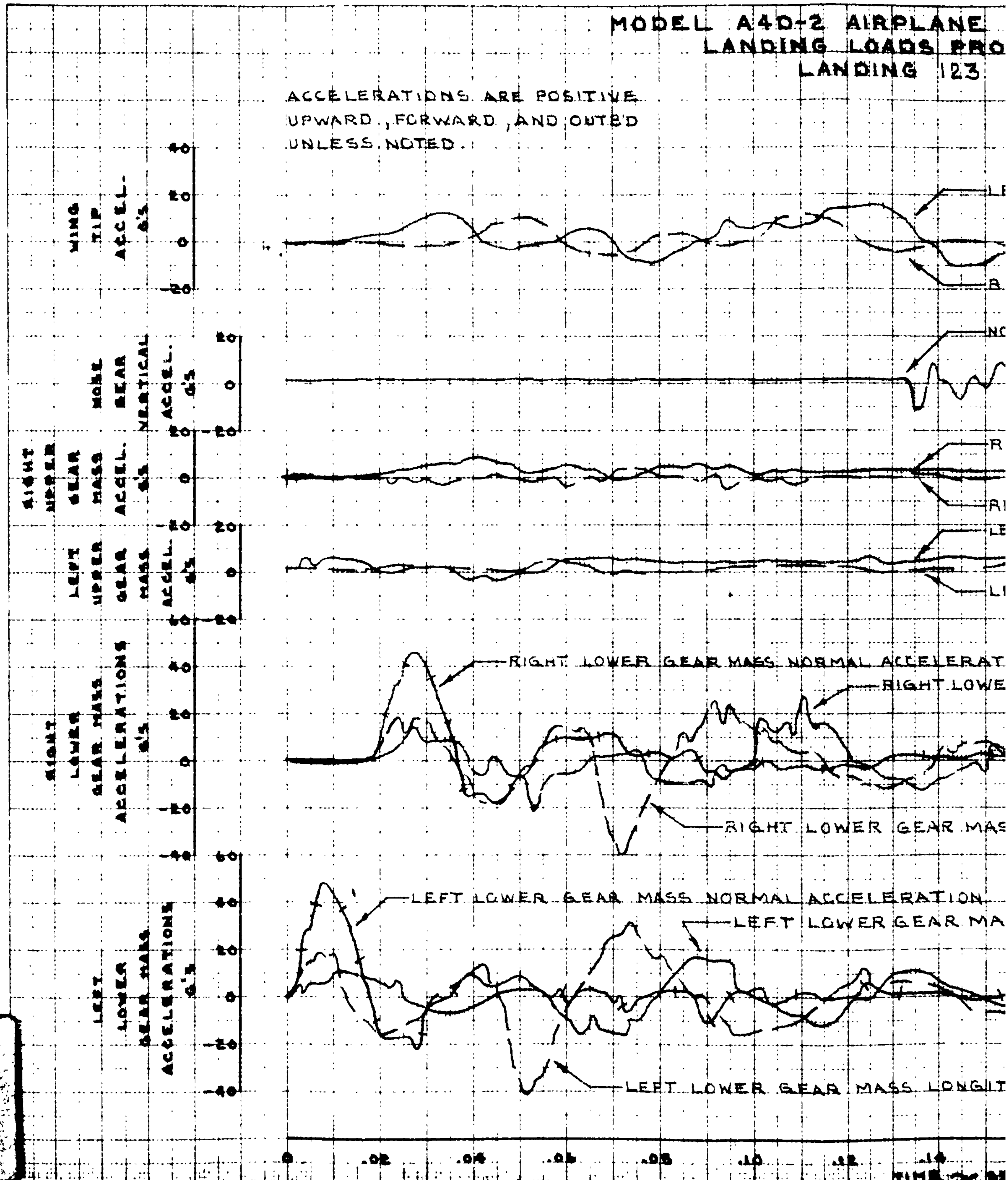
TESTING DIVISION

PAGE 8.4.79
MODEL A4D-2
REPORT NO. DEV-3616



FORM 28 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



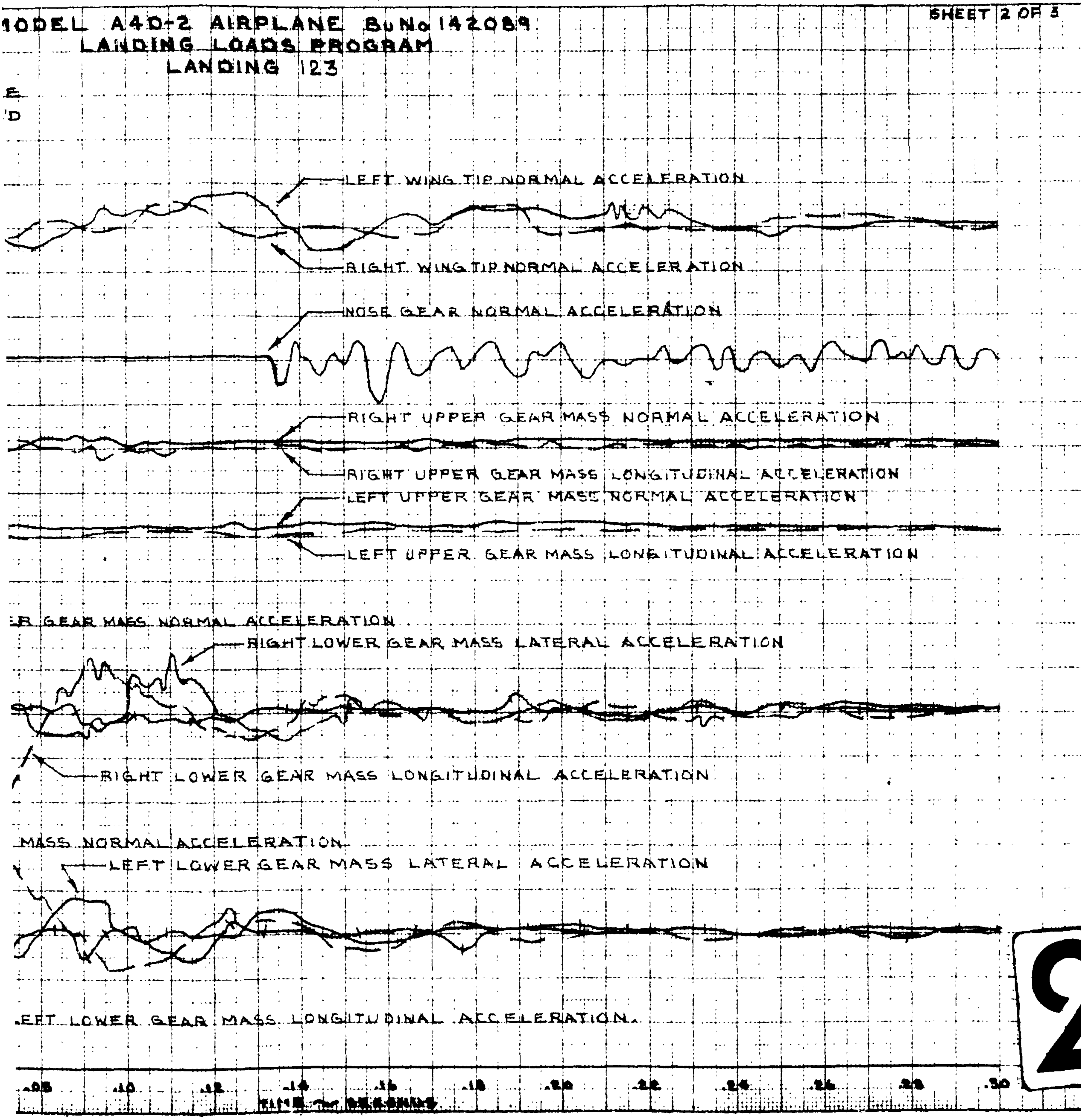
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

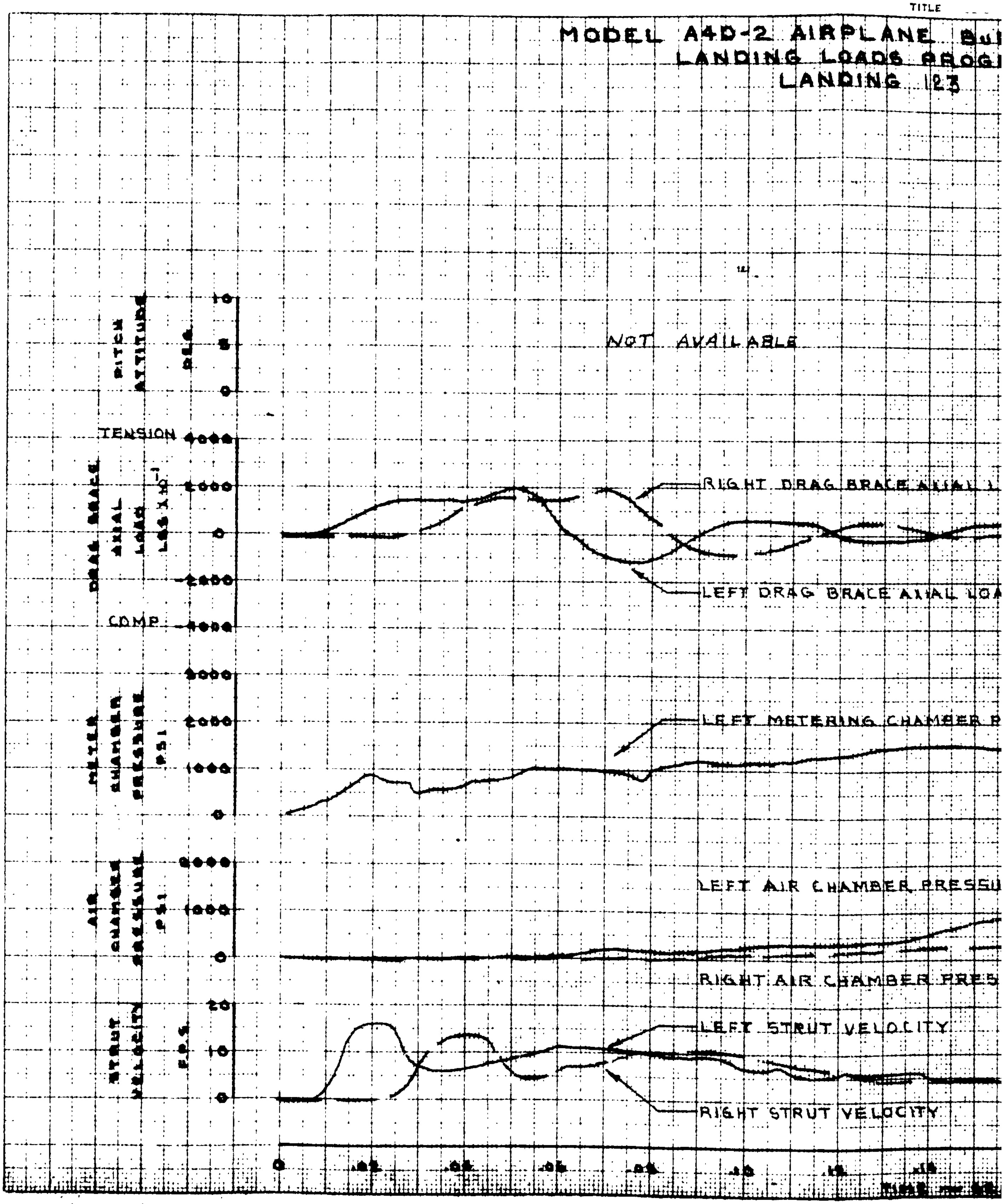
PAGE 8.4.80
MODEL: A4D-2
REPORT NO.: DEV-3616



2

FORM 25 BP 1
(REV 7 54)

PREPARED BY:
CHECKED BY
DATE
TITLE



K·E

104

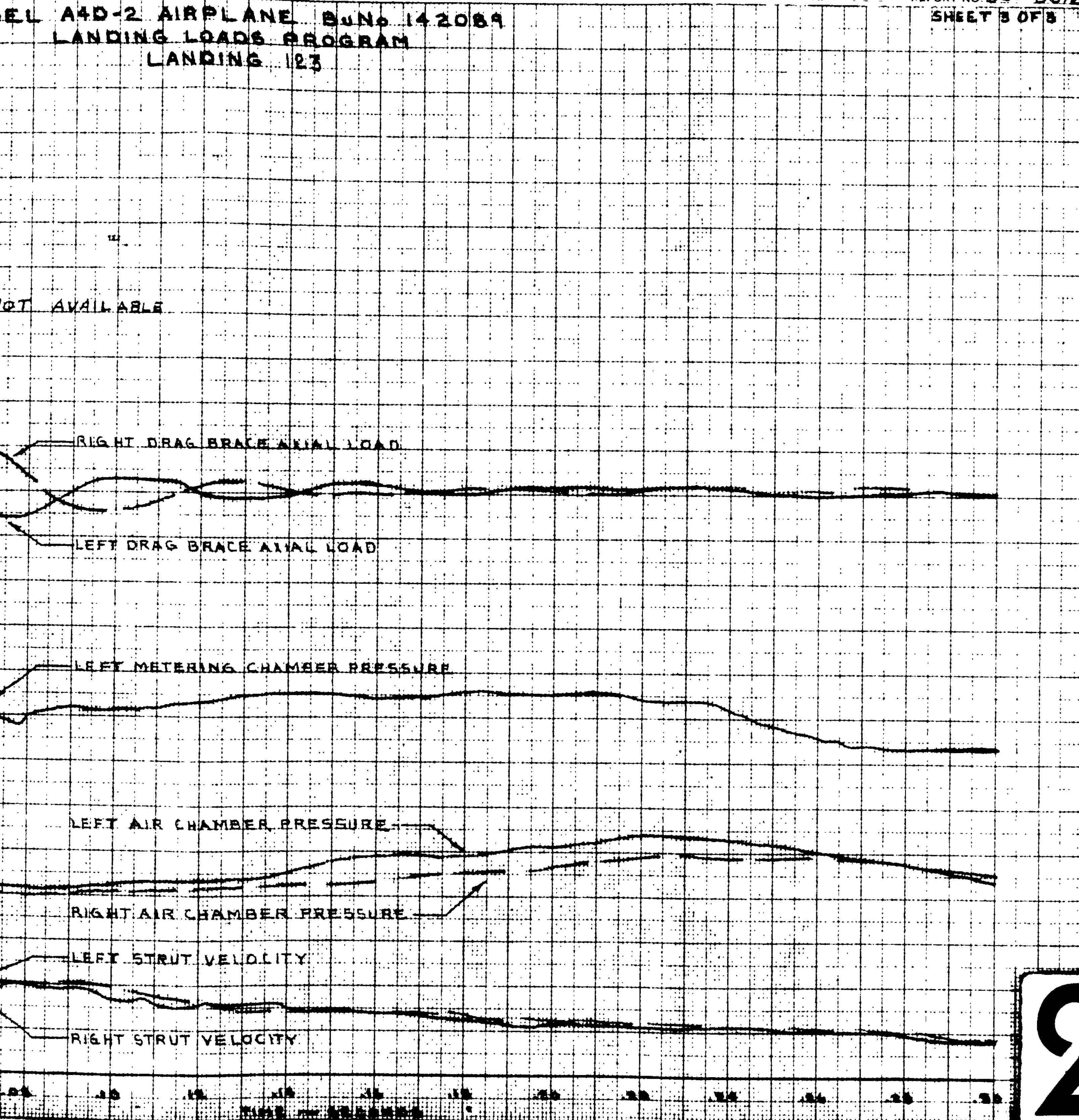
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

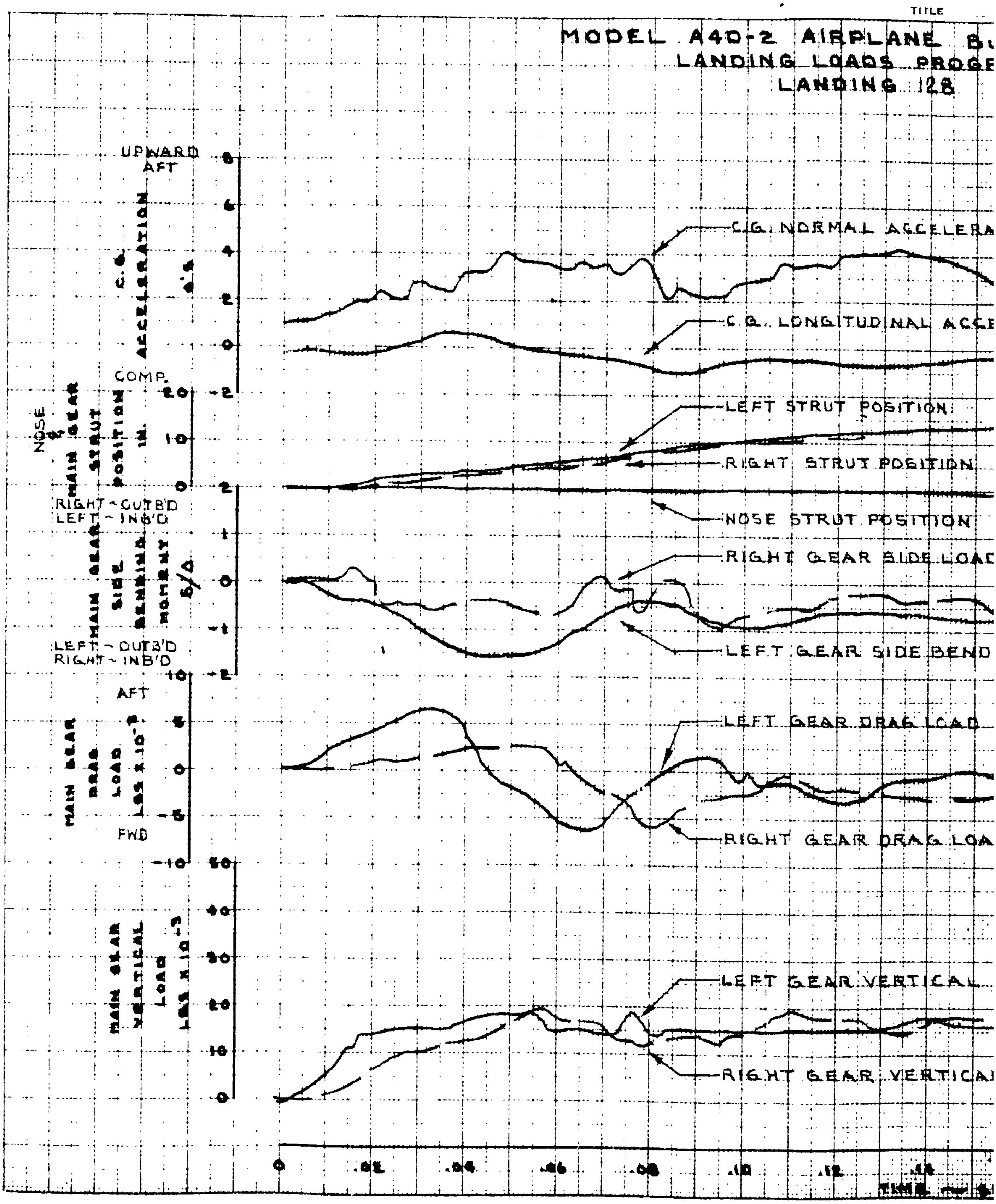
PAGE: 8.4.81
MODEL A4D-2
REPORT NO. DEV-3616
SHEET 3 OF 3



2

FORM 25 BP-1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE



501

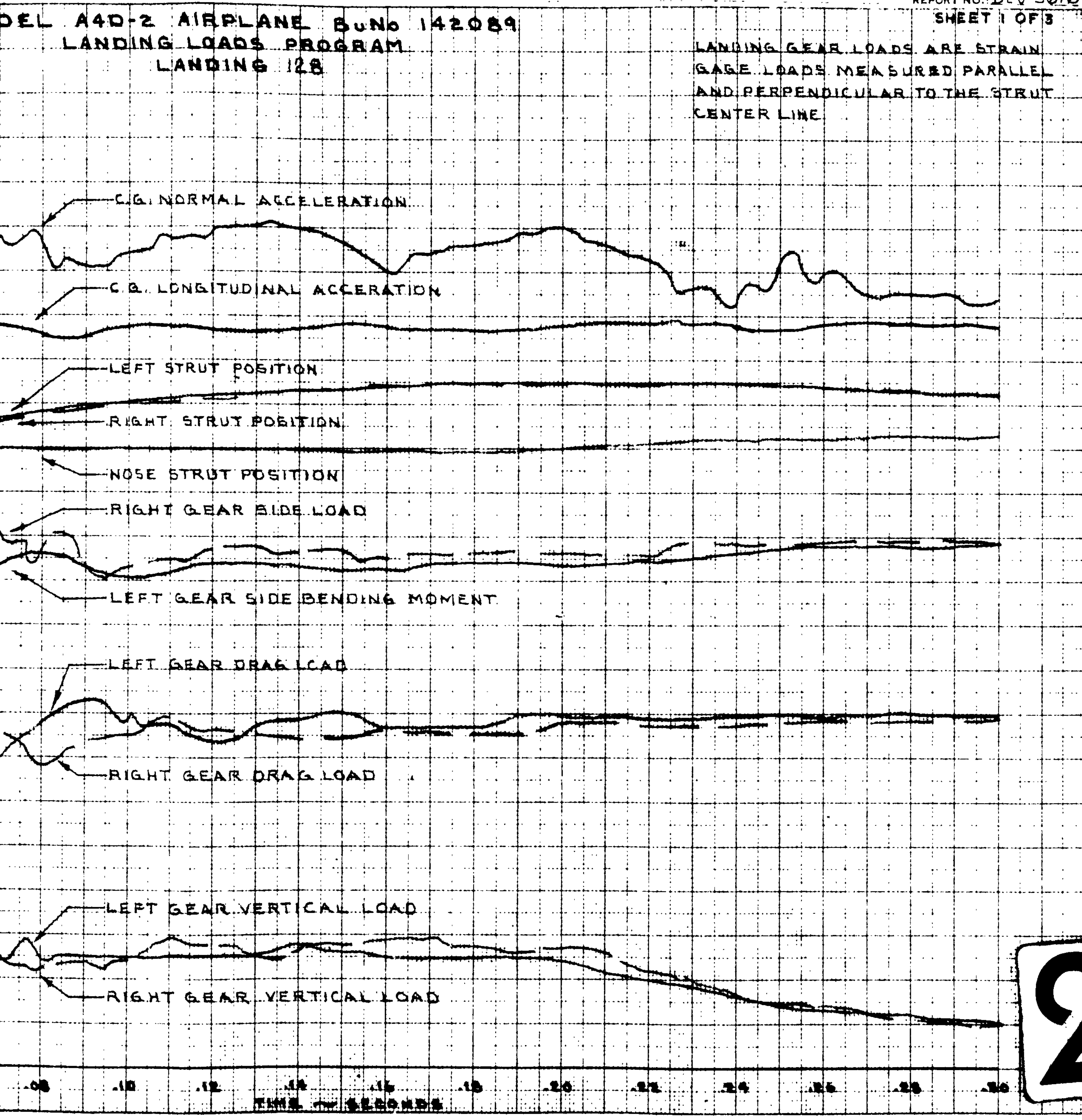
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

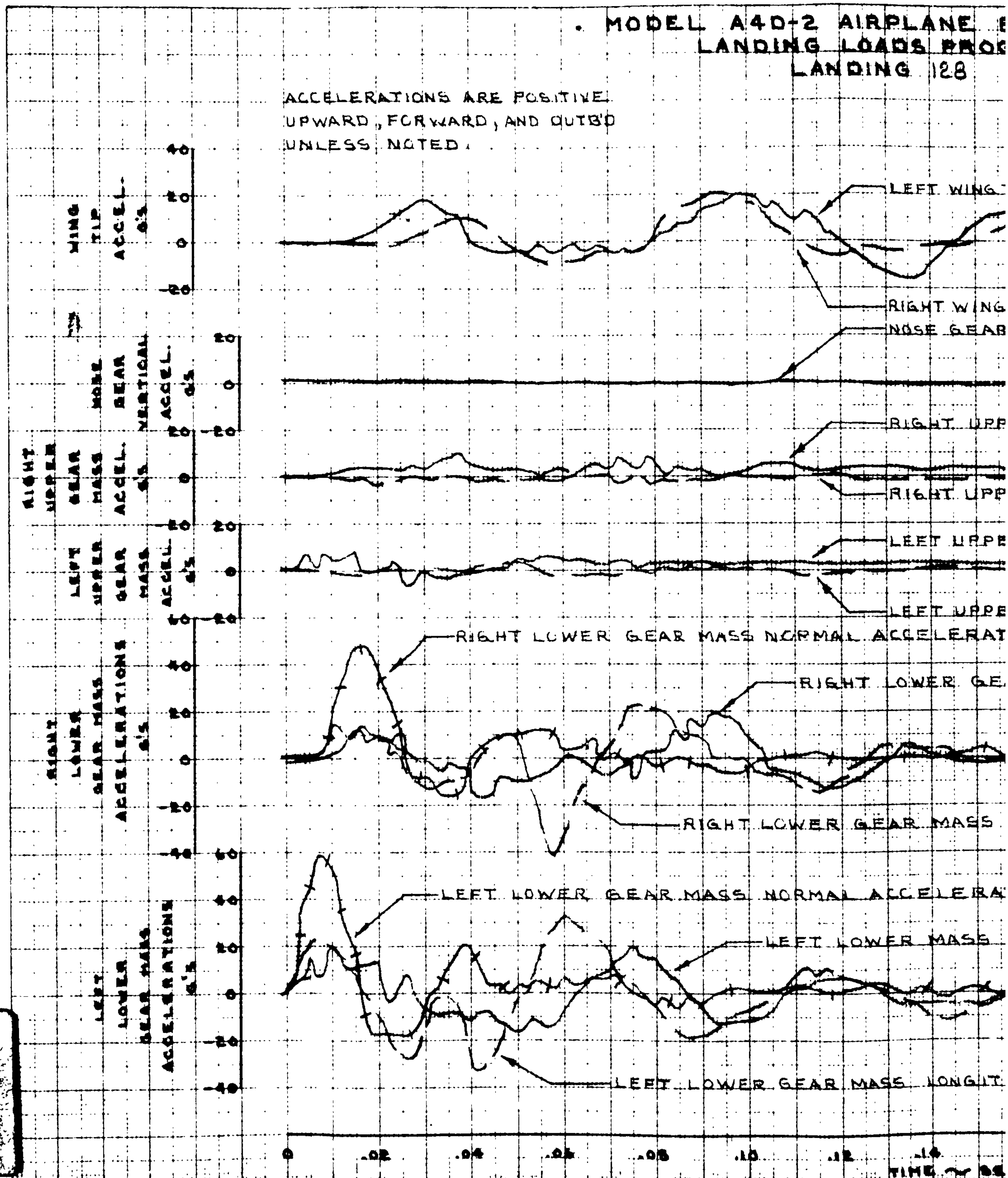
PAGE 8.4.82
MODEL A4D-2
REPORT NO. DEV-3616



2

FORM 28 DP 1
(REV. 7-54)

PREPARED BY:
CHECKED BY
DATE
TITLE

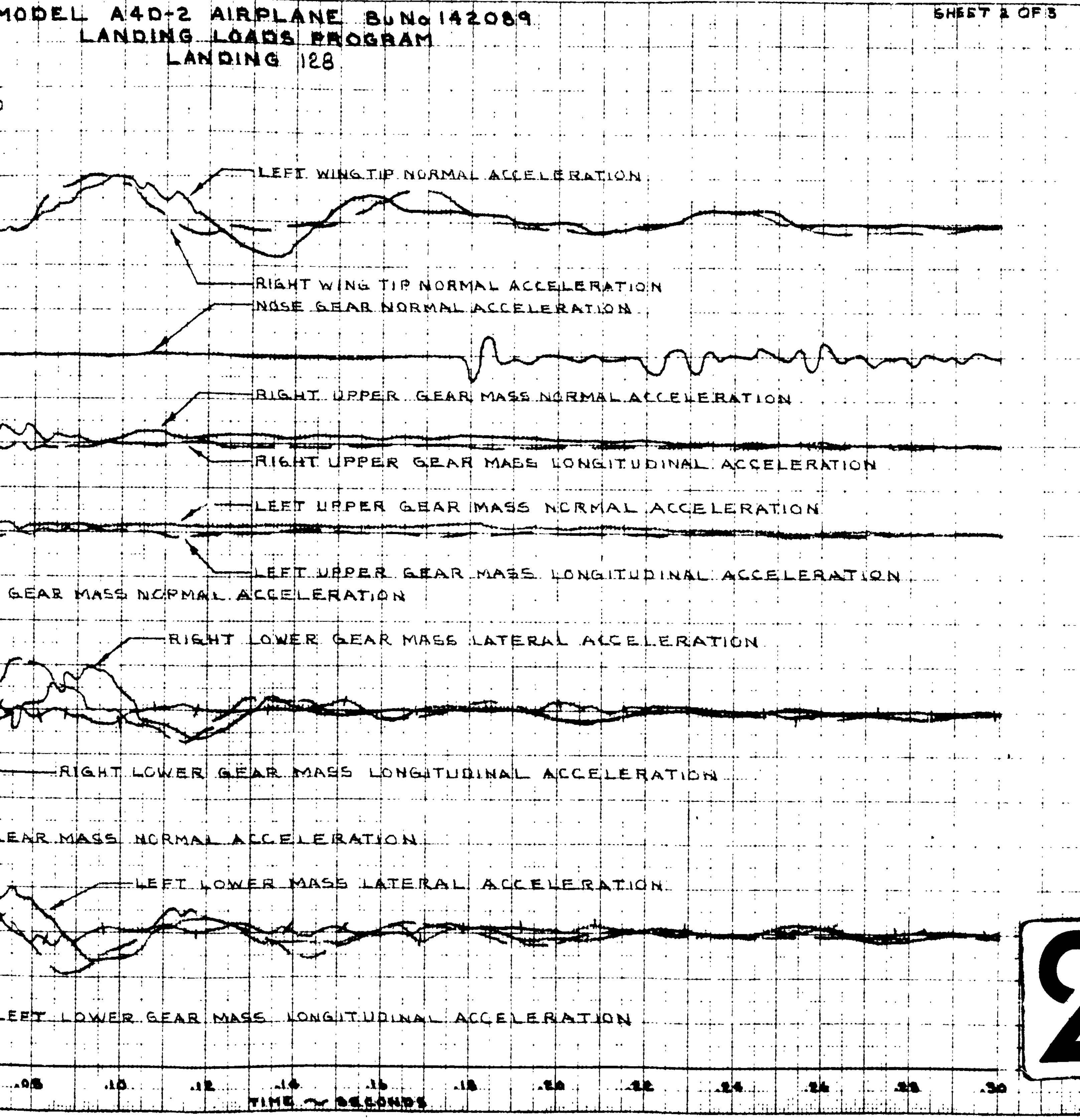


PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.4.83
MODEL: A4D-2
REPORT NO. DEV-3616

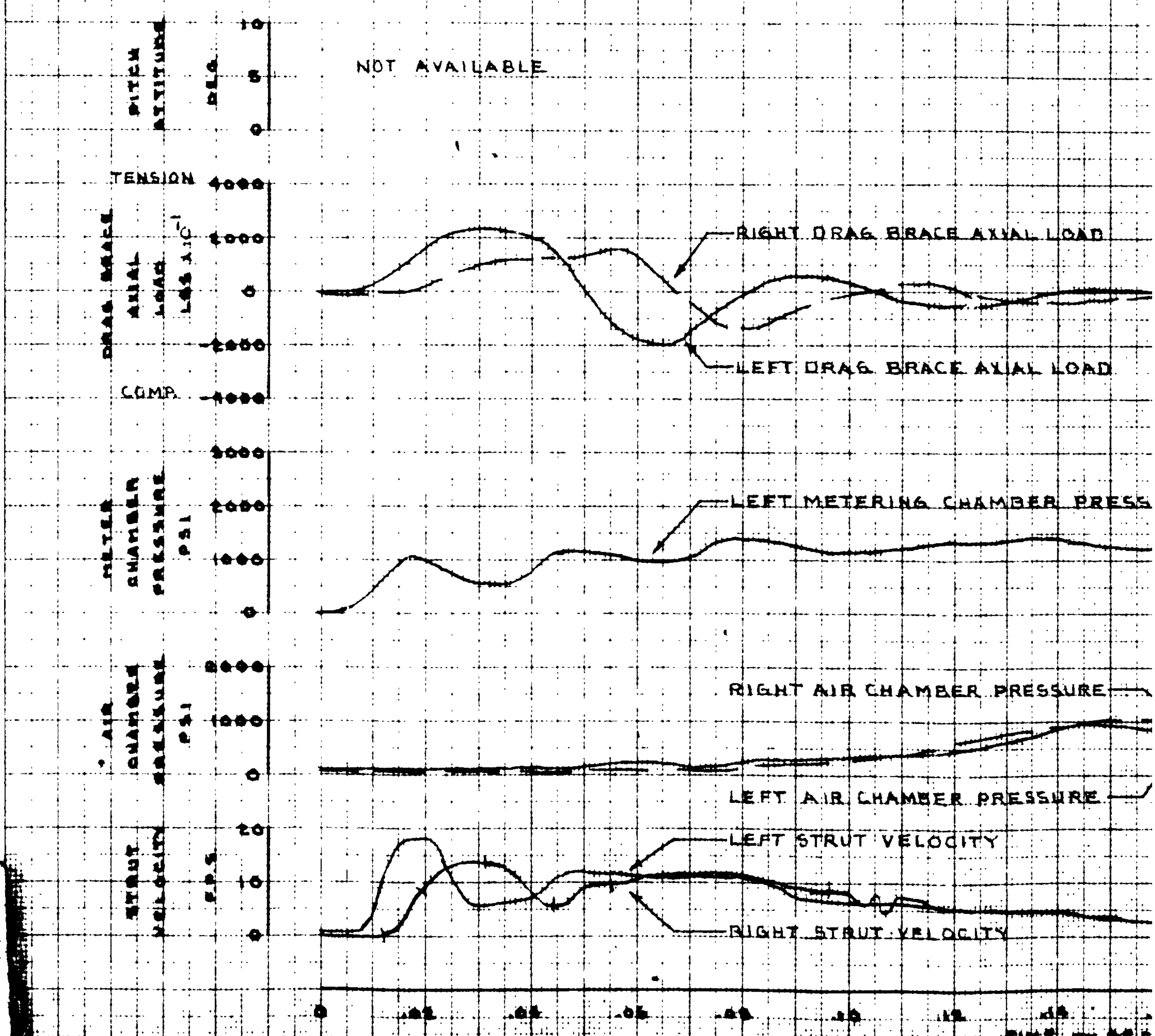


2

FORM 25 RP 1
(REV. 7-54)

PREPARED BY
CHECKED BY
DATE
TITLE

MODEL A4D-2 AIRPLANE BuN
LANDING LOADS PROGR
LANDING 128



K&E

107

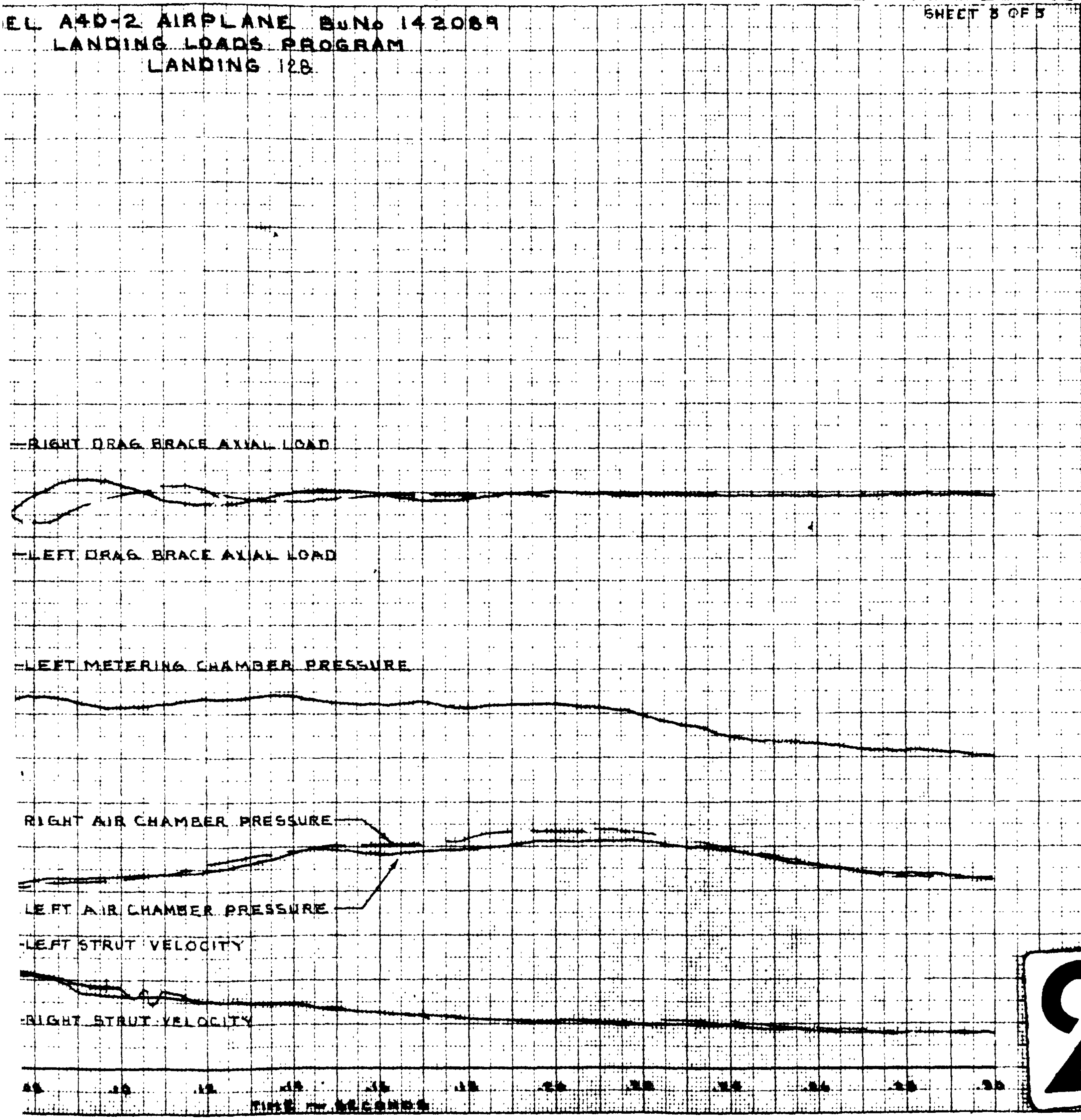
1

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE 8.4.84
MODEL A4D-2
REPORT NO. DEV-3616



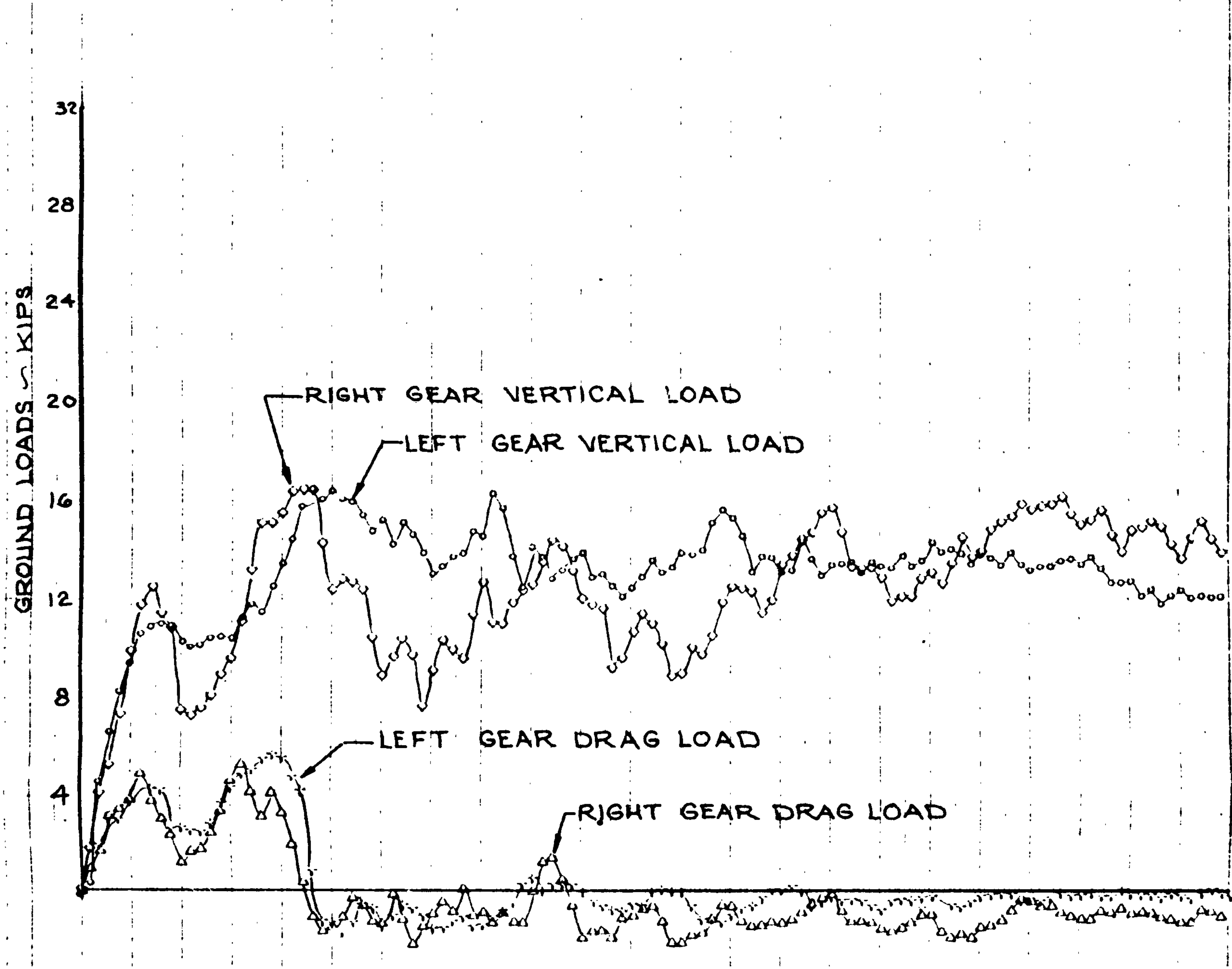
2

108

K+E ALBANENE TOOL ® TRACING PAPER

FORM 25 BP-1 (REV 7-54)

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION LANDING No. 121



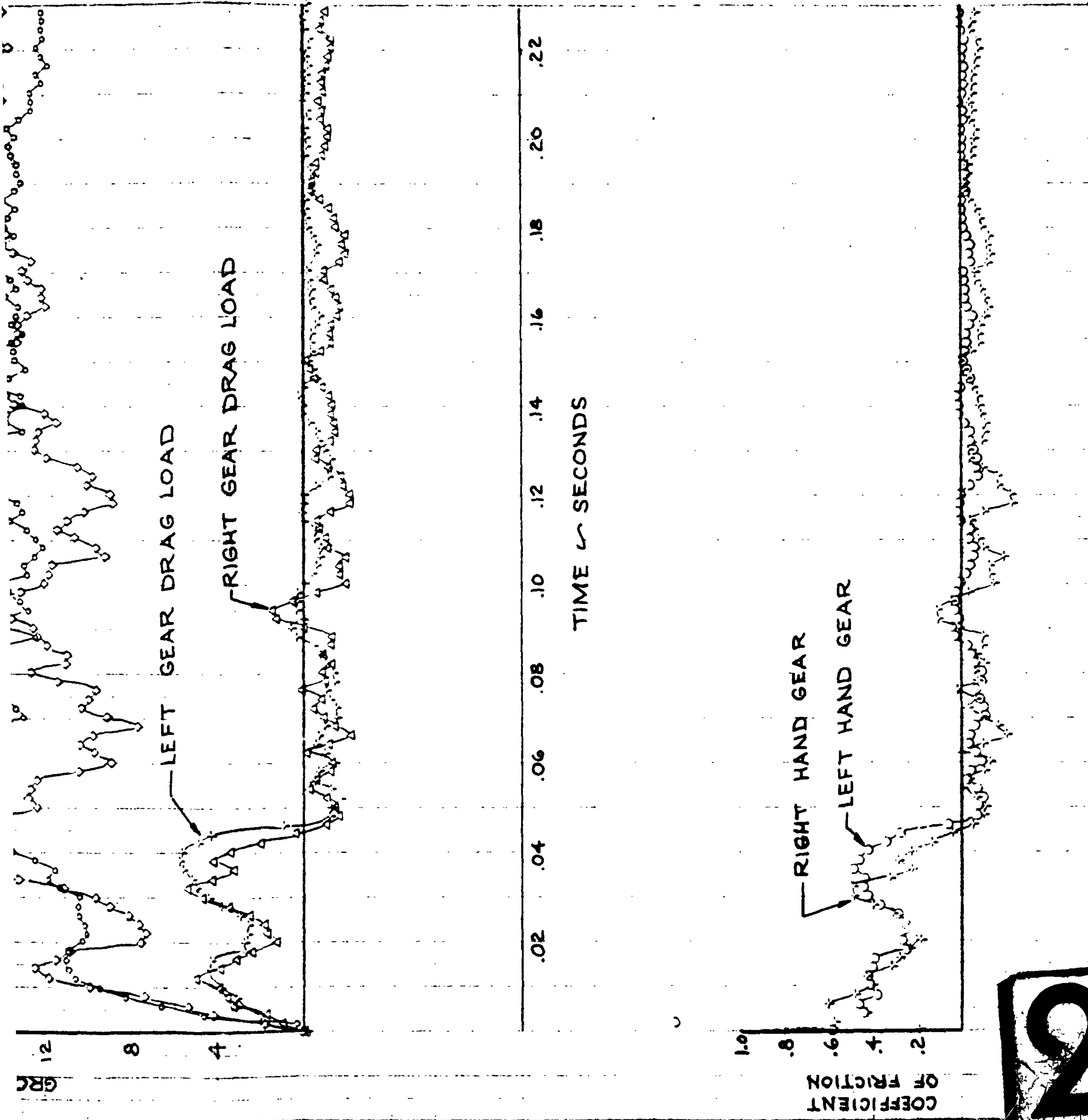
PREPARED BY:
CHECKED BY:
DATE:
TITLE:

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

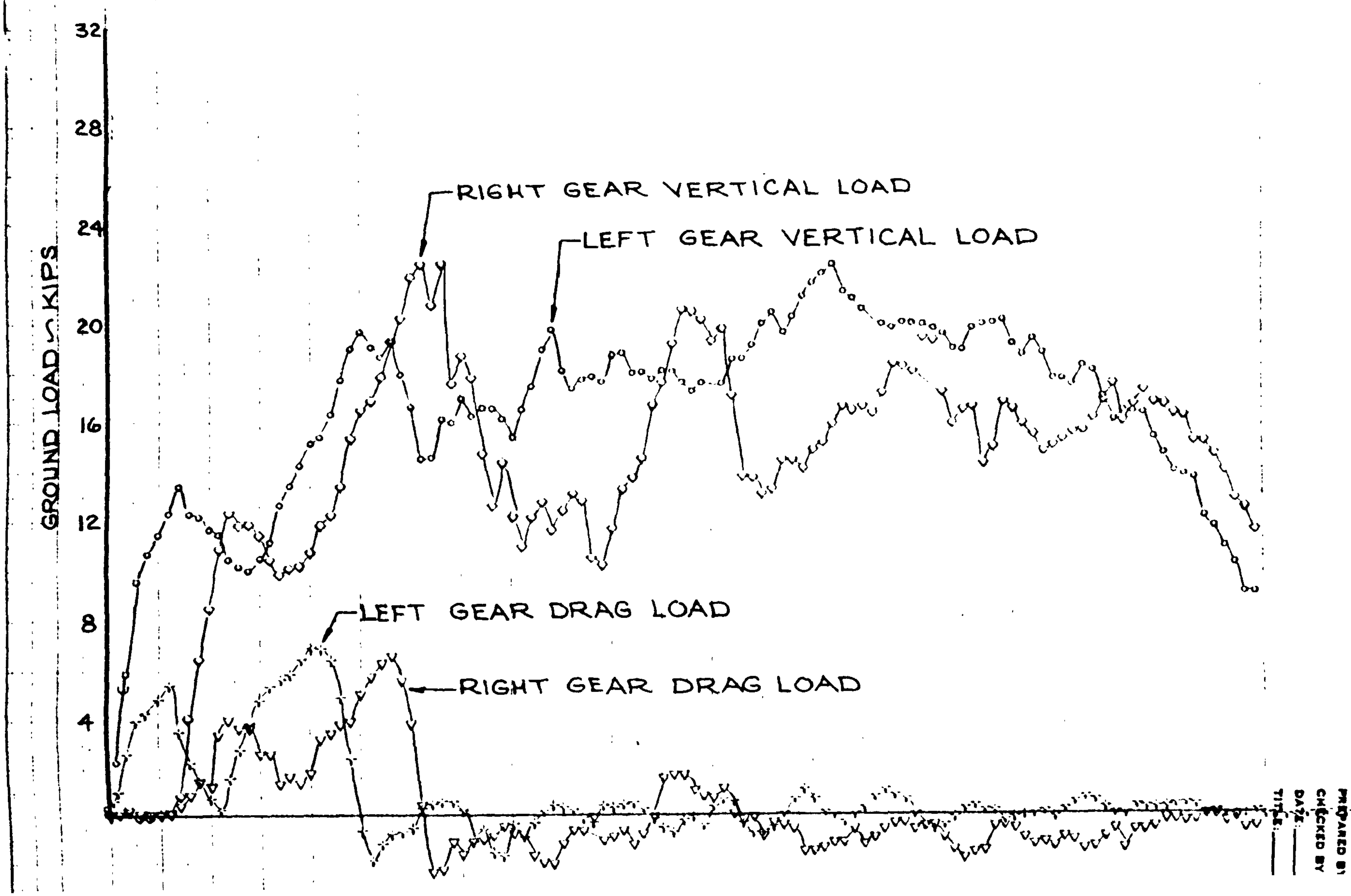
PAGE: 8.5.1
MODEL: A4D-2
REPORT NO.: DEV-3616



2

109

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION
LANDING No. 125

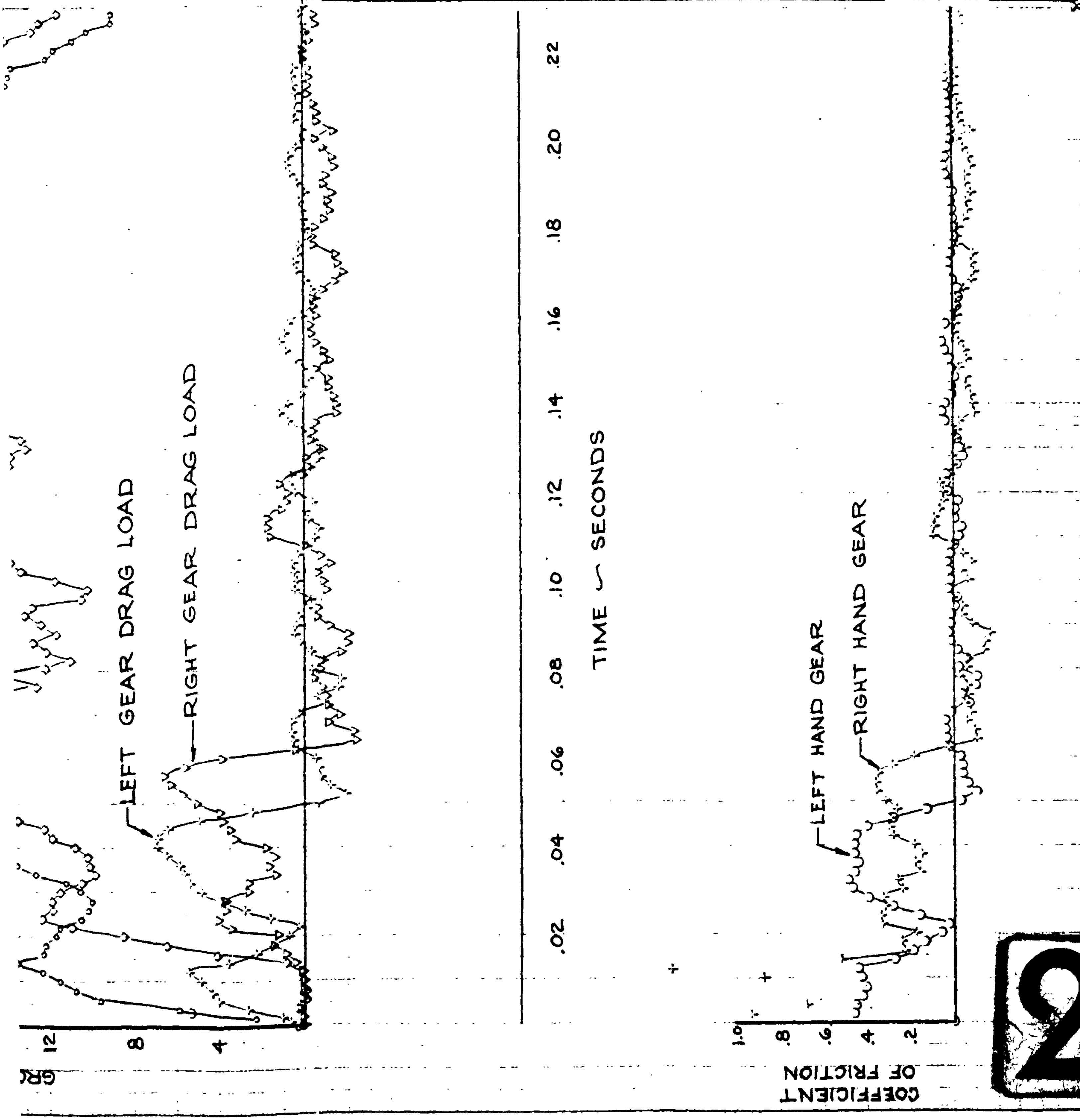


PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

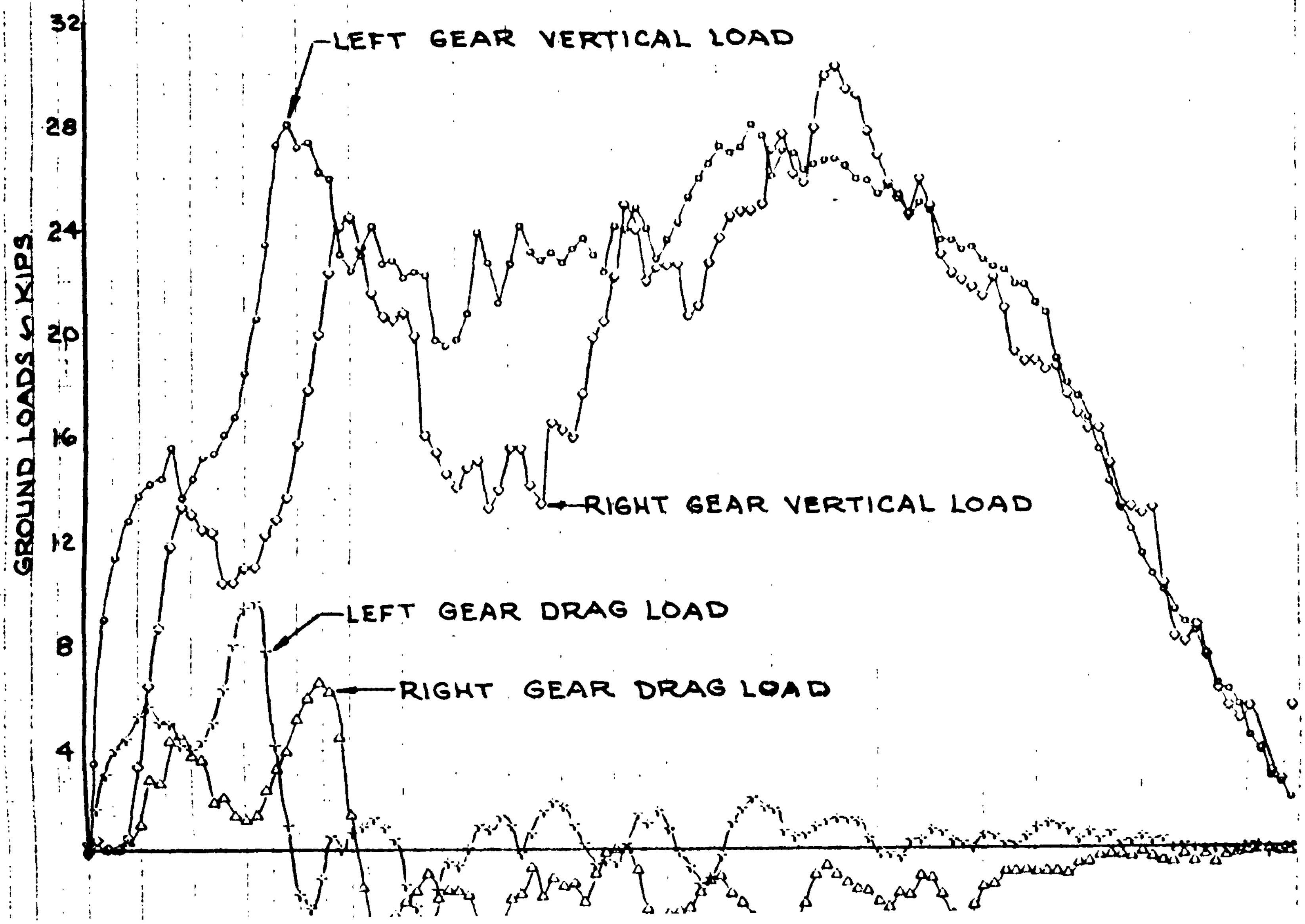
TESTING DIVISION

PAGE: 8.5.2
MODEL: A4D-2
REPORT NO. DEV-3616



2

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION LANDING No. 126



PREPARED B

CHECKED BY

DATE:

TITLE:

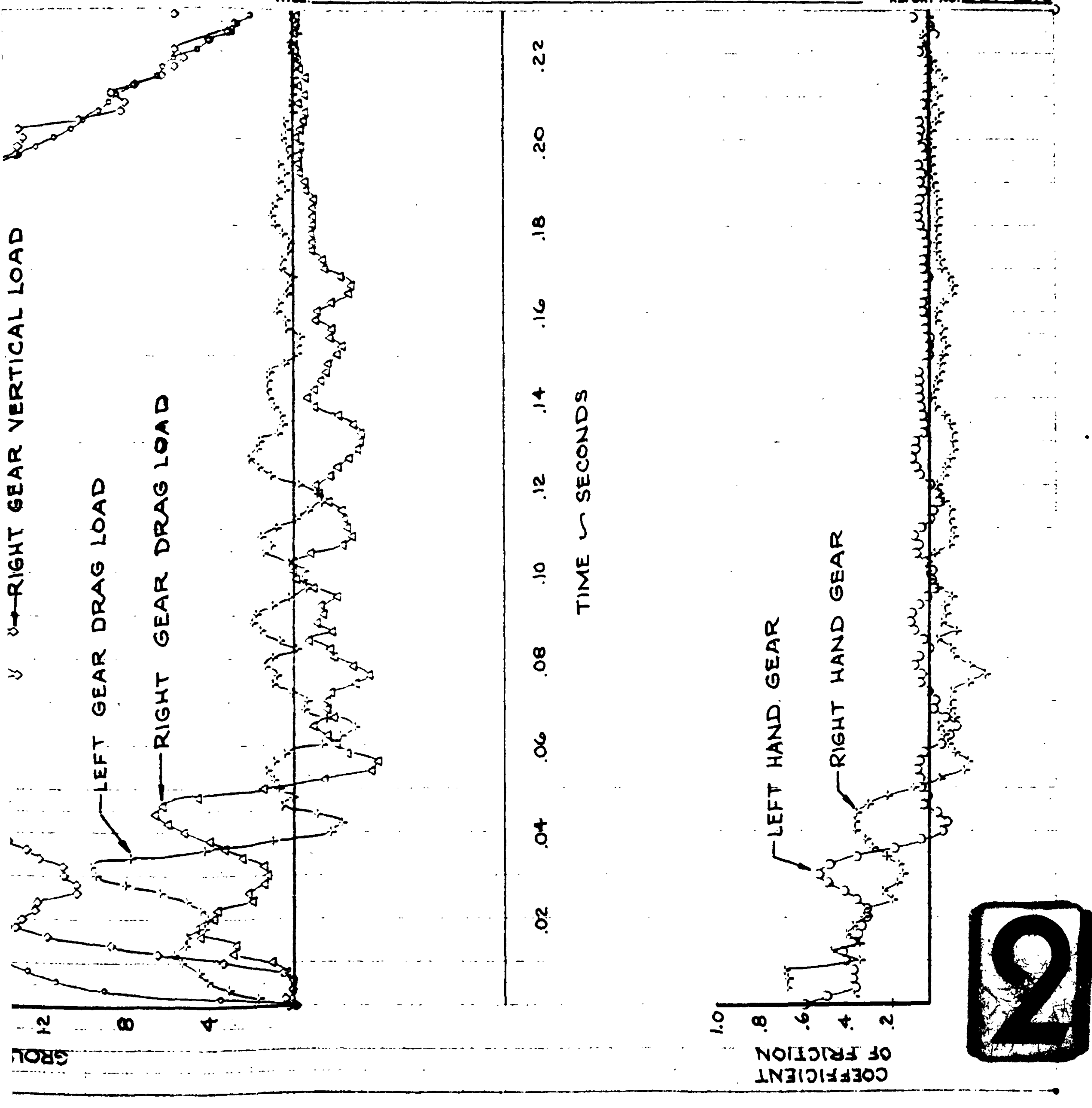
PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

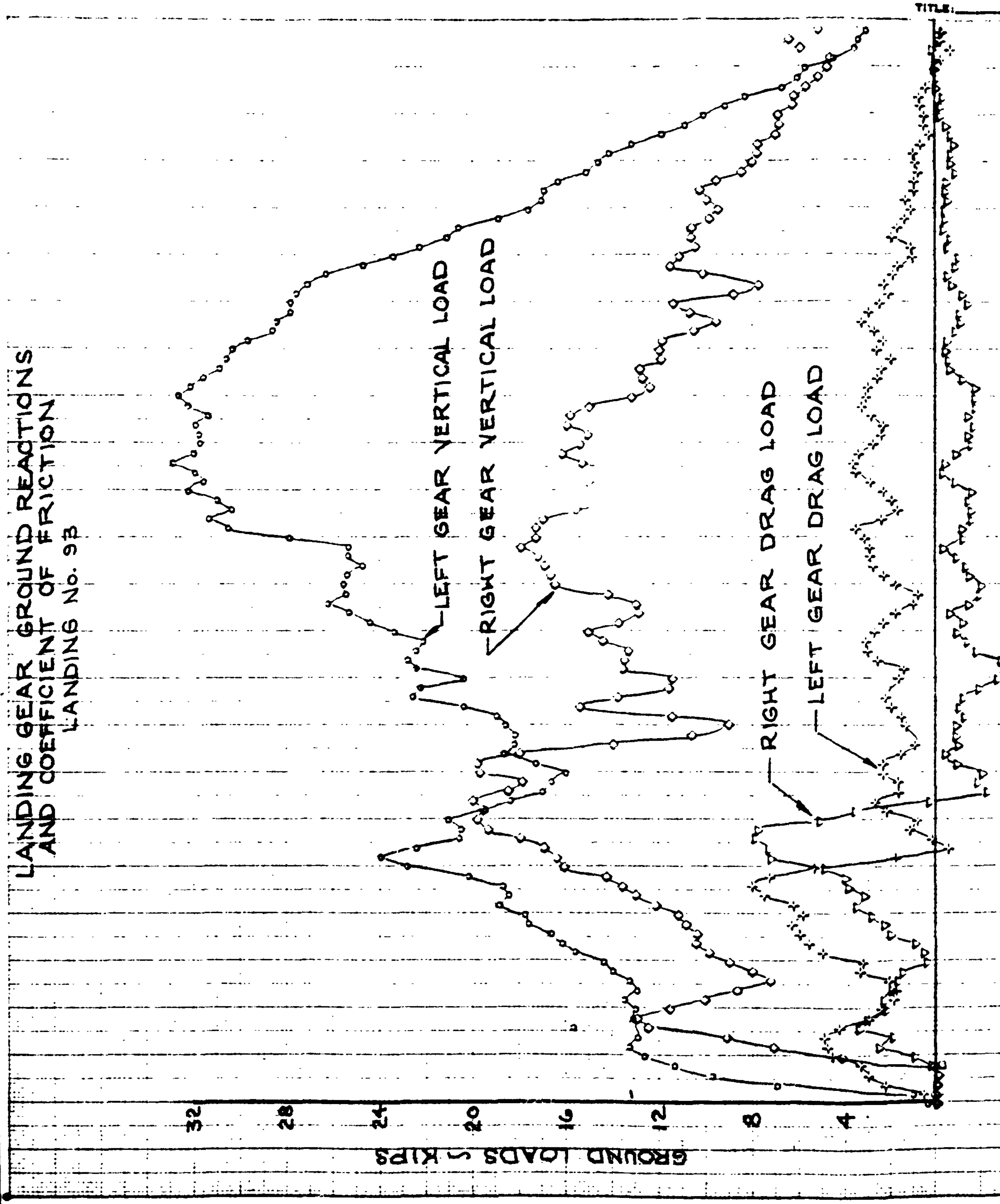
MODEL: A4D-2

REPORT NO. DEV-3616



FORM 25 BP-1
(REV 7-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:



111

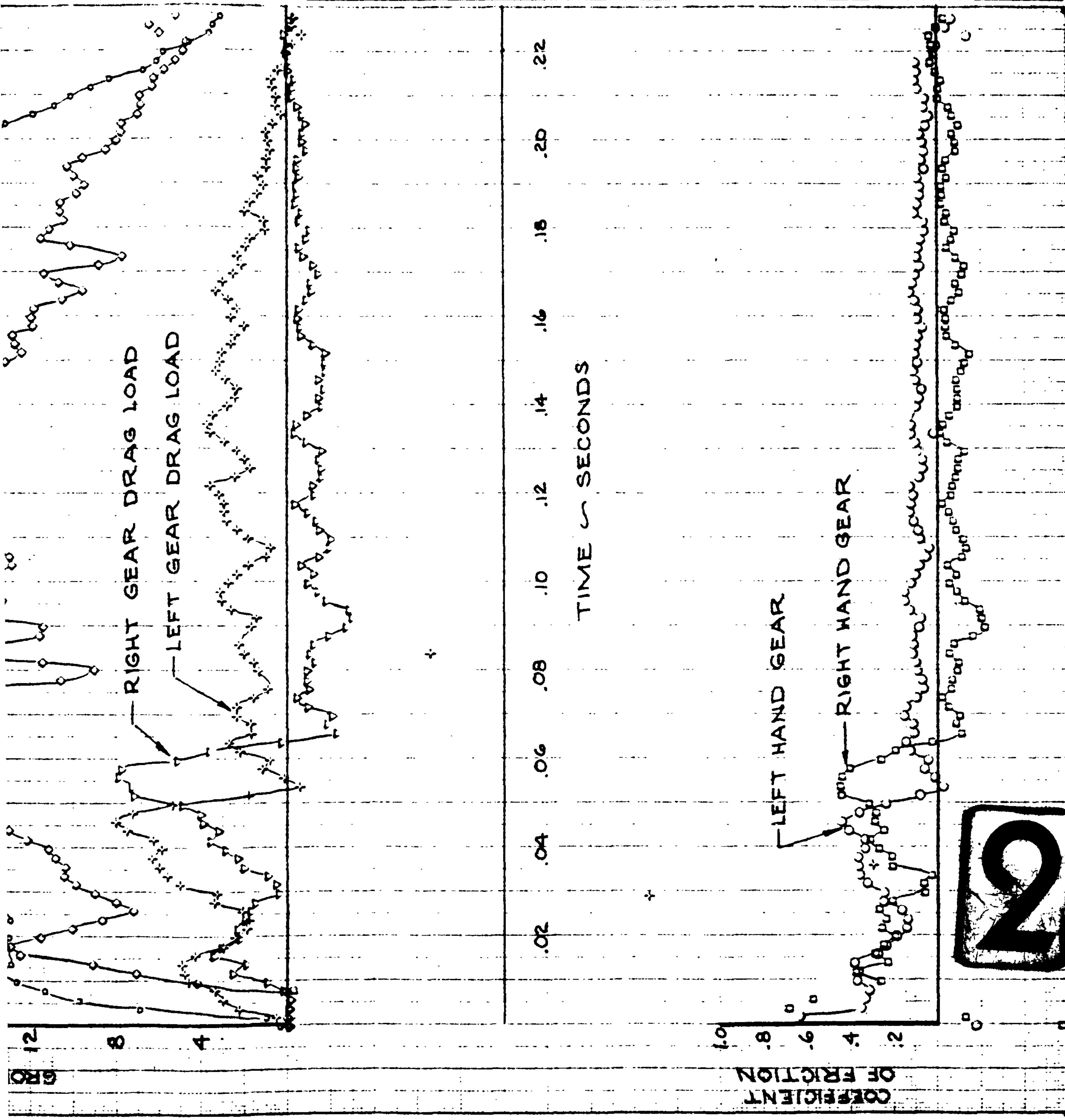
K+E

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.5.4
MODEL: A4D-2
REPORT NO.: DEV-3616

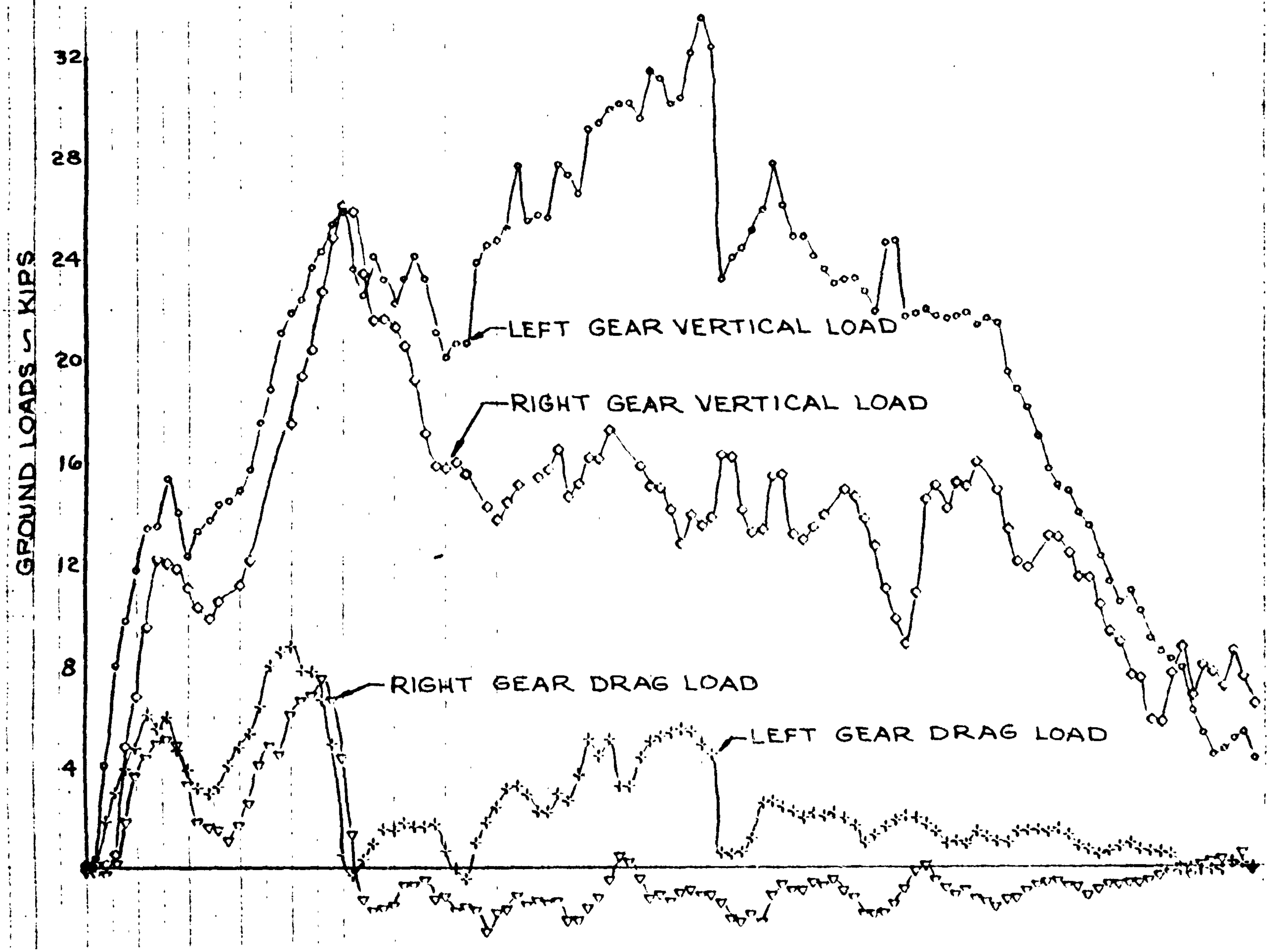


112

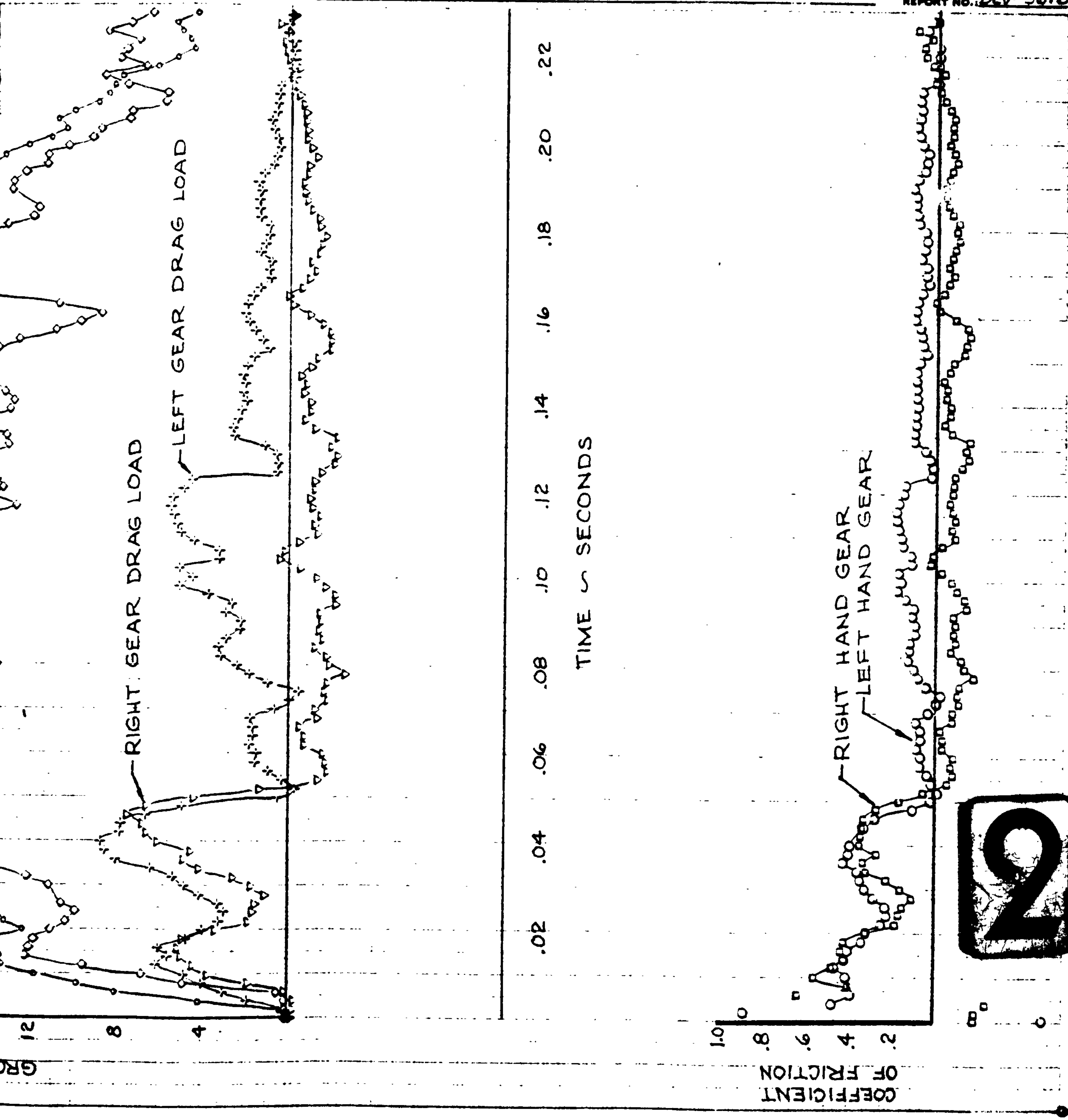
K-E ALBANENE

FORM 35 BP-1 (REV. 7-54)

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION
LANDING No. 95

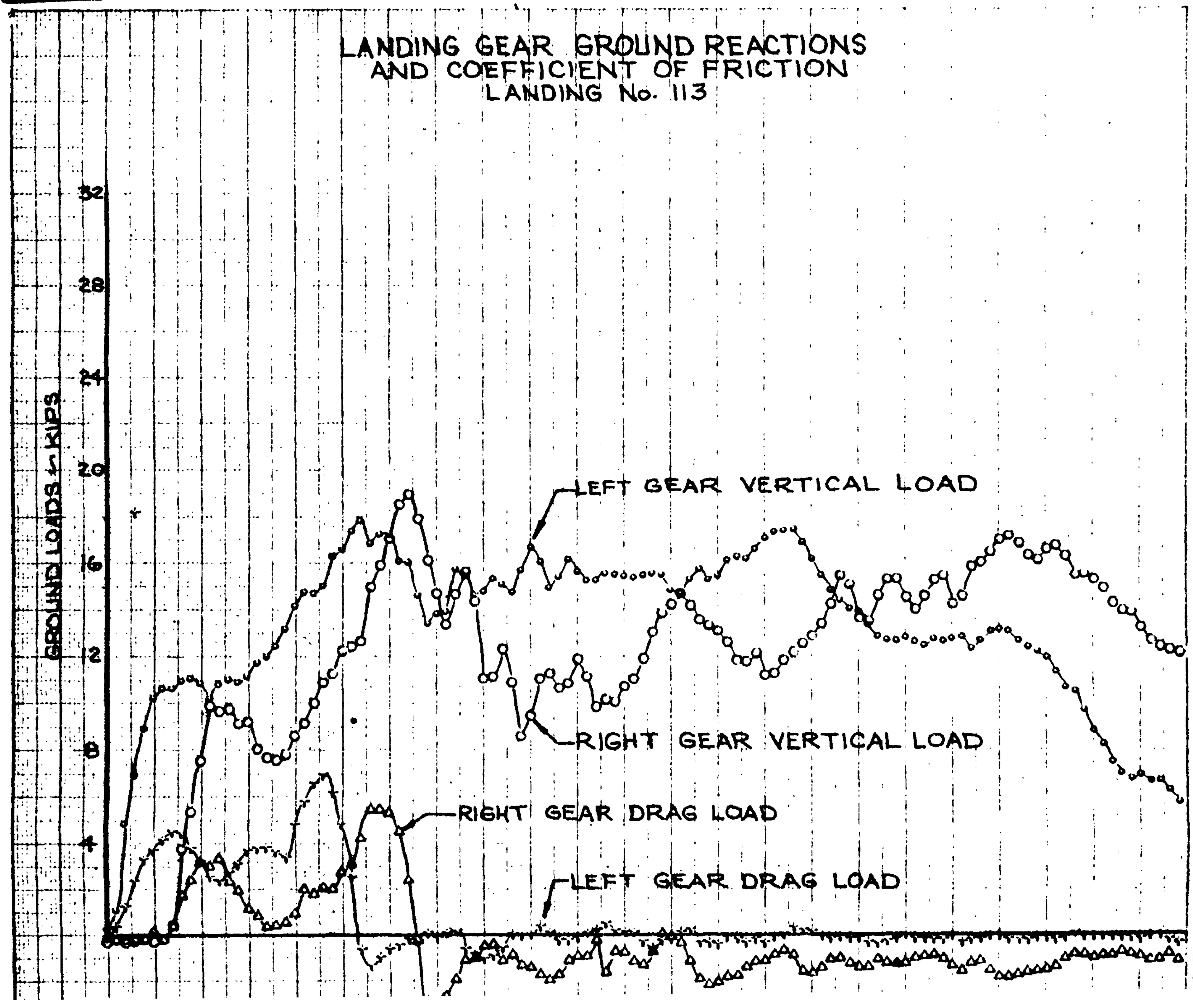


PREPARED BY
CHECKED BY
DATE:
TITLE:


RIGHT GEAR DRAG LOAD
LEFT GEAR DRAG LOAD
TIME ~ SECONDS
.02
.04
.06
.08
.10
.12
.14
.16
.18
.20
.22
RIGHT HAND GEAR
LEFT HAND GEAR
COEFFICIENT OF FRICTION
1.0
.8
.6
.4
.2
12
8
4
2

113 K+E ALBANENE TOOL TRACING PAPER

FORM 25 DP-1 (REV. 7-54)



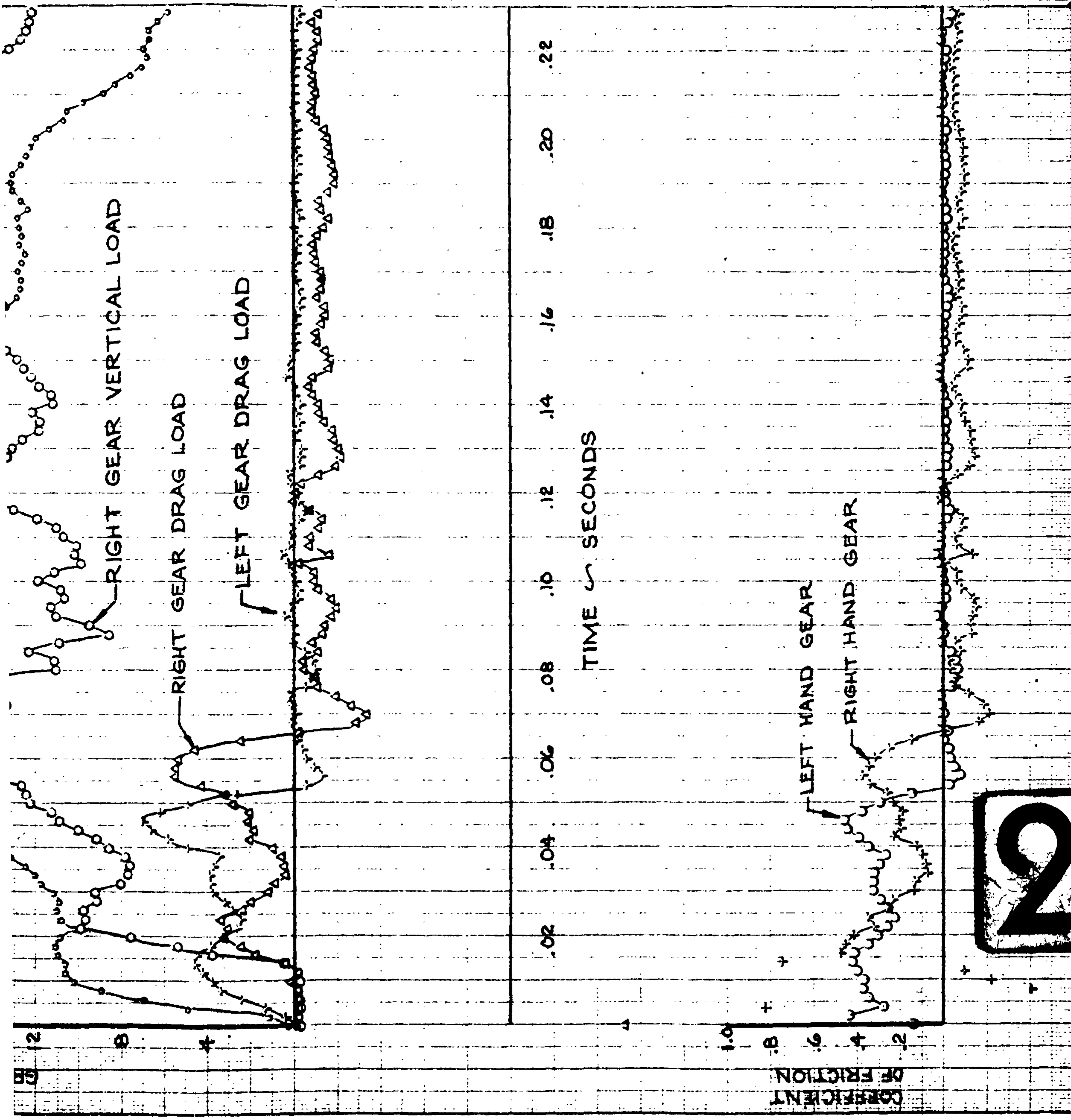
PREPARED B
CHECKED BY
DATE:
TITLE:

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

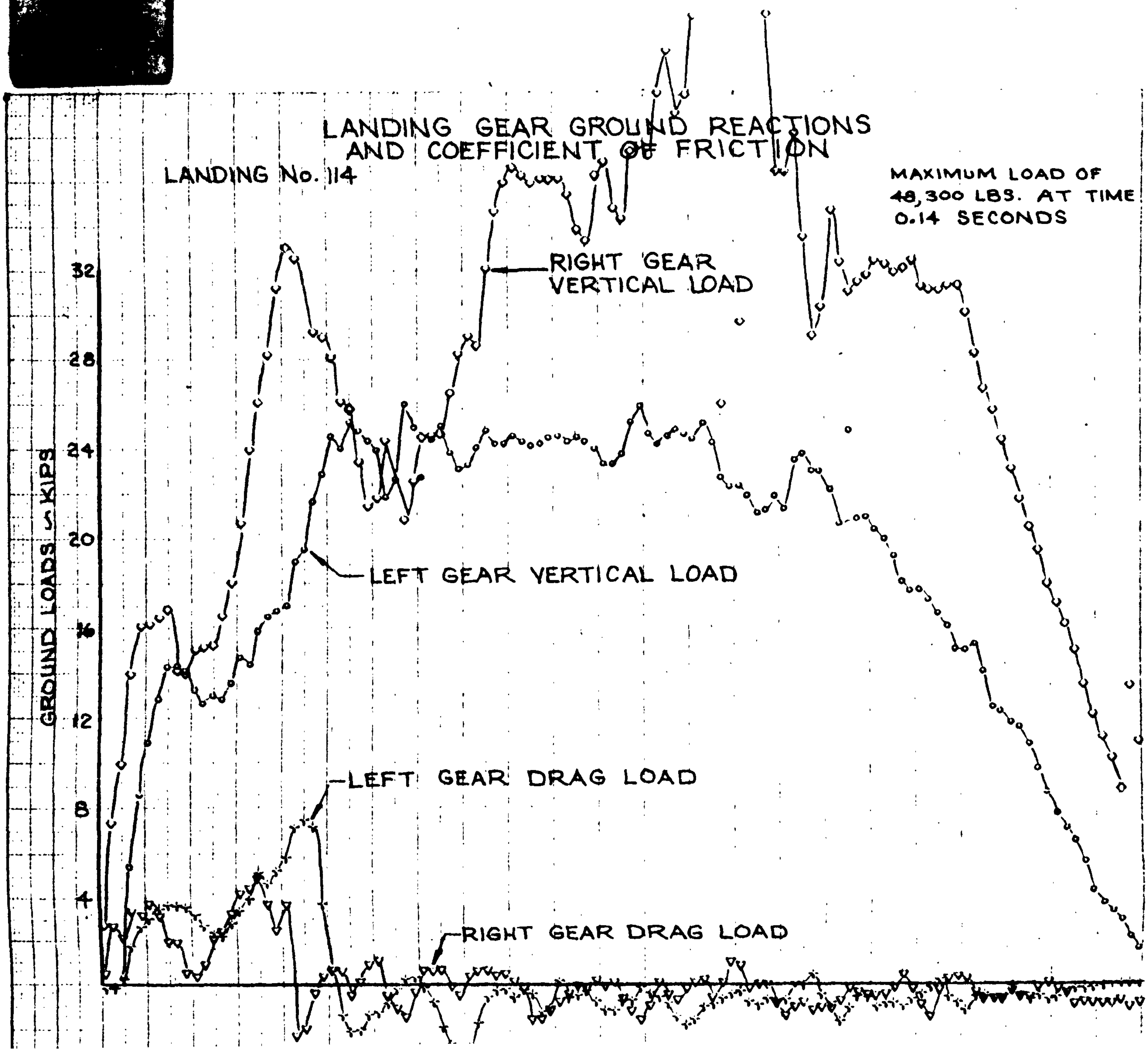
PAGE: 8.5.6
MODEL: A4D-2
REPORT NO. DEV-3616



2

114 N-E ALBANENE [illegible]

FORM 25 BP-1
(REV. 7-54)



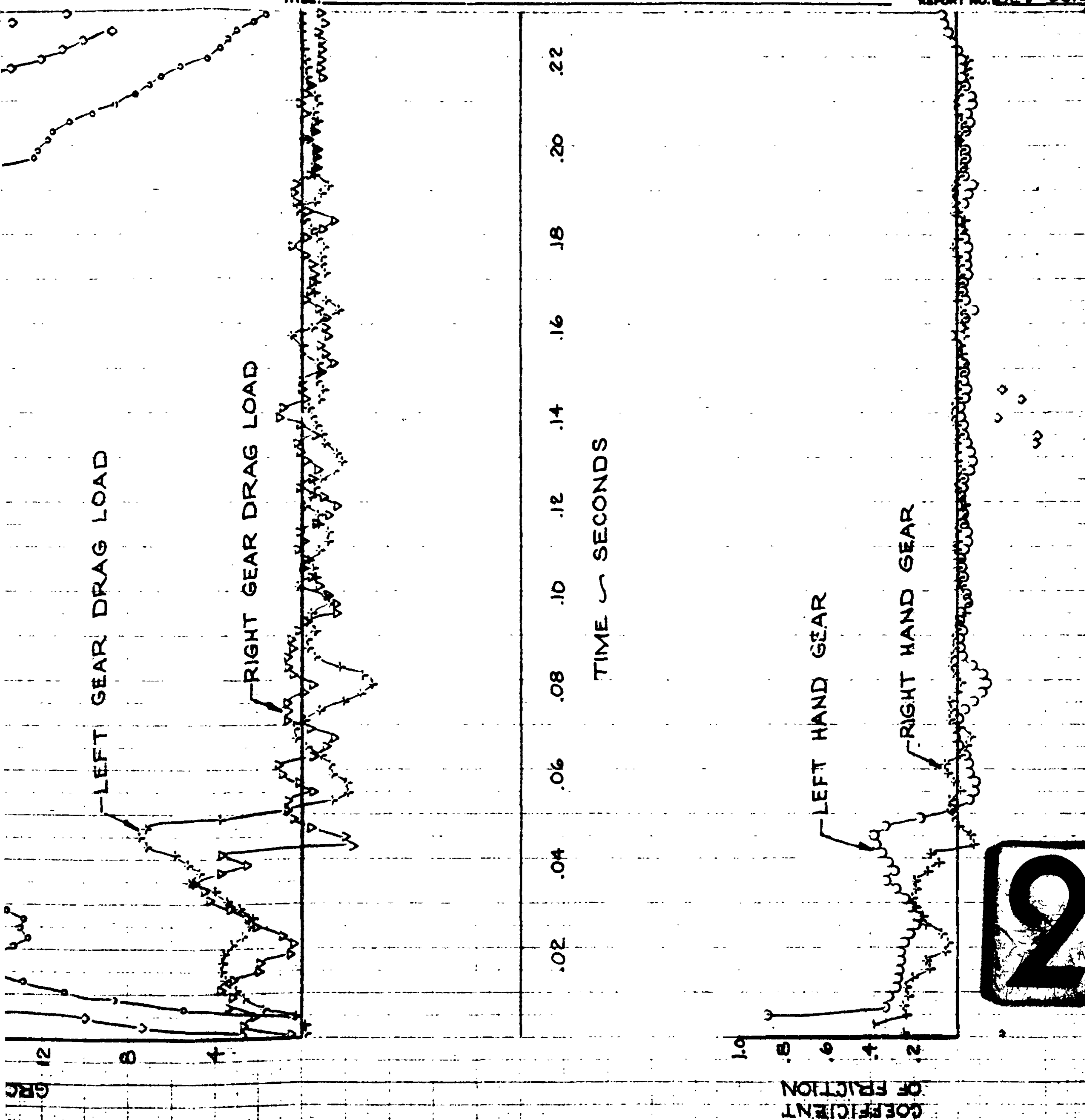
PREPARED B
CHECKED BY
DATE:
TITLE:

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.5.7
MODEL: A4D-2
REPORT NO. DEV-3616

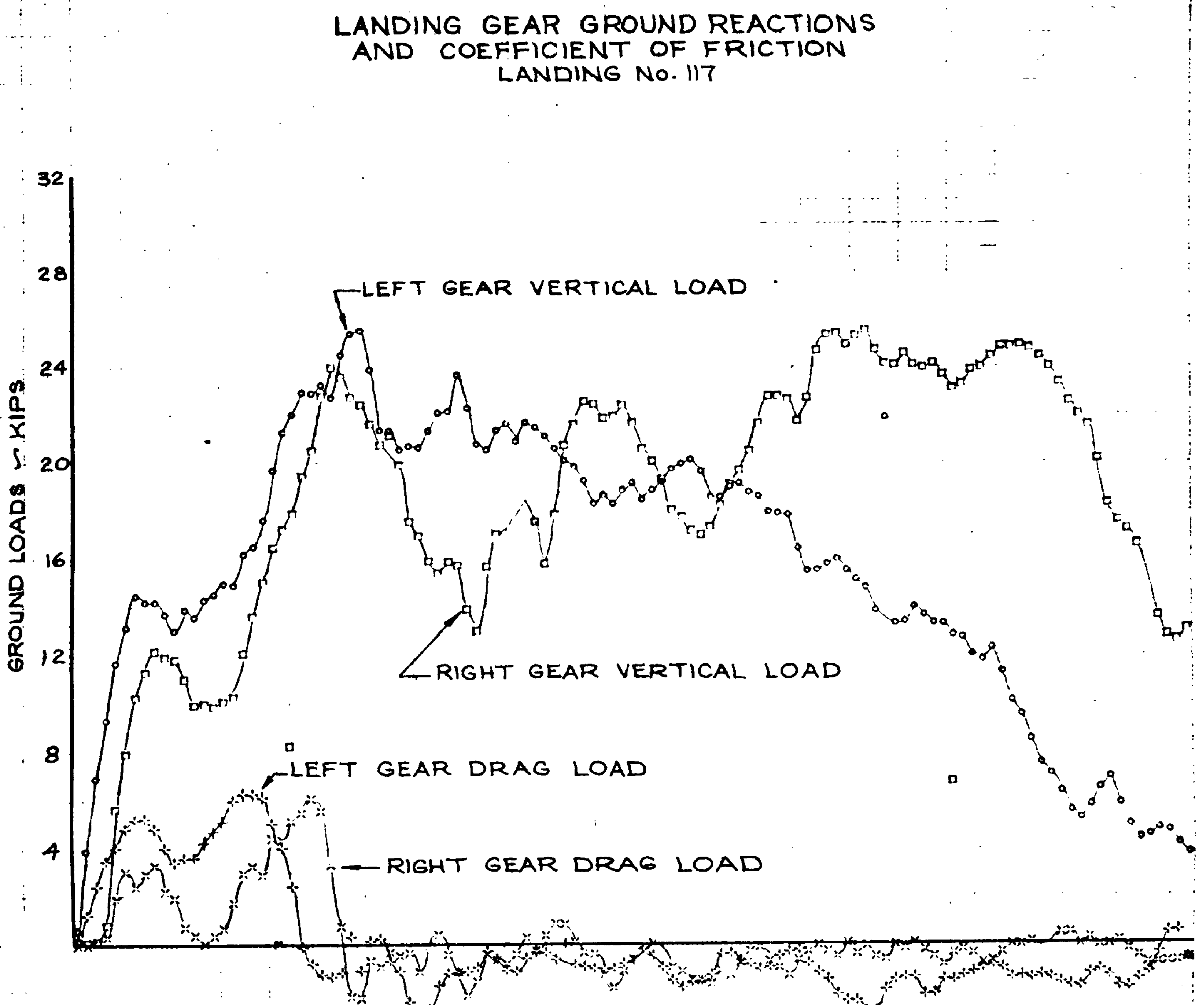


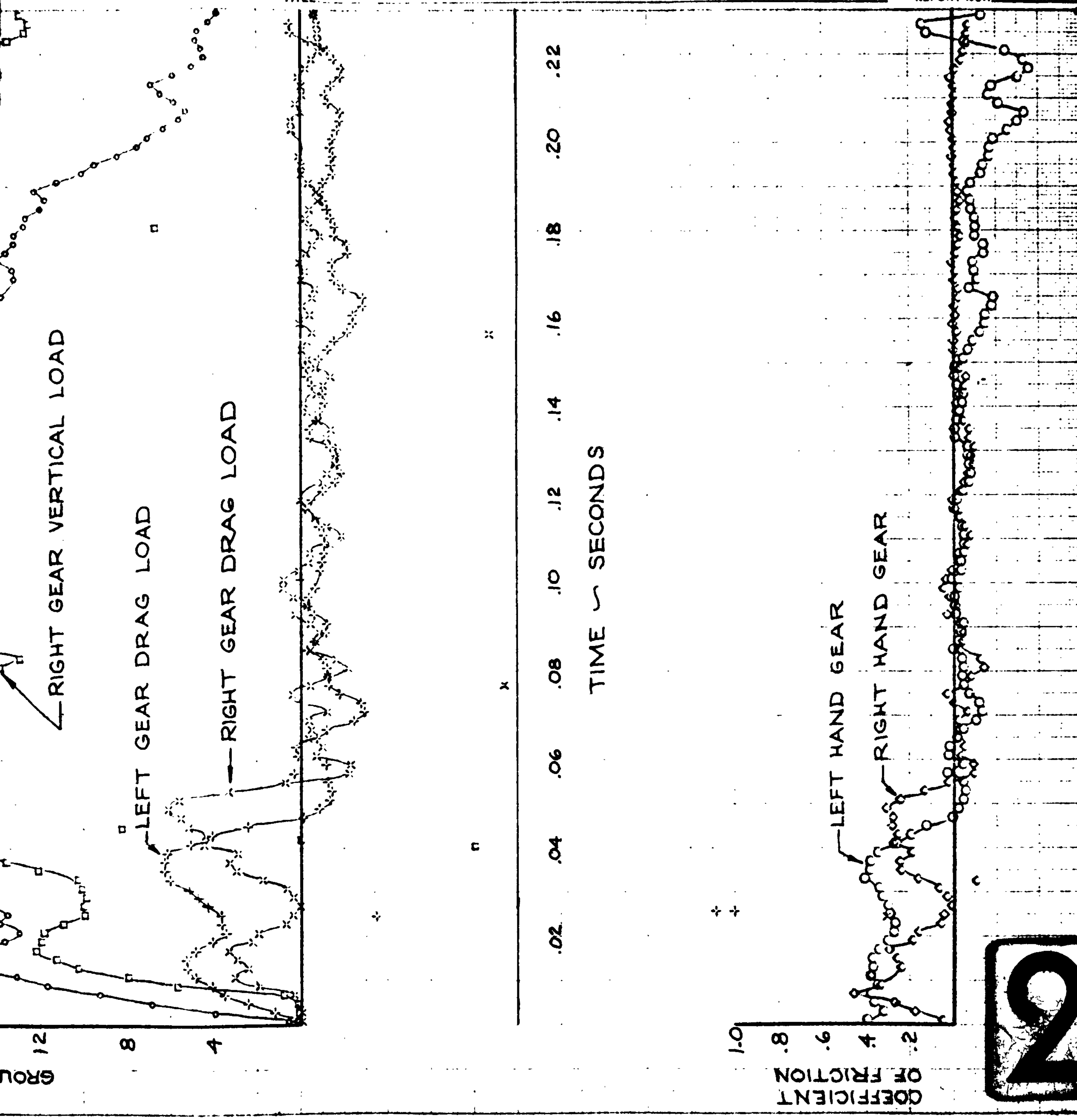
115

K-E ALBANENE 196L® TRACING PAPER

FORM 25 SP 1 (REV. 7-54)

PREPARED BY
CHECKED BY
DATE:
TITLE:




RIGHT GEAR VERTICAL LOAD
LEFT GEAR DRAG LOAD
RIGHT GEAR DRAG LOAD
TIME ~ SECONDS
.02
.04
.06
.08
.10
.12
.14
.16
.18
.20
.22
12
8
4
LEFT HAND GEAR
RIGHT HAND GEAR
1.0
.8
.6
.4
.2
COEFFICIENT OF FRICTION

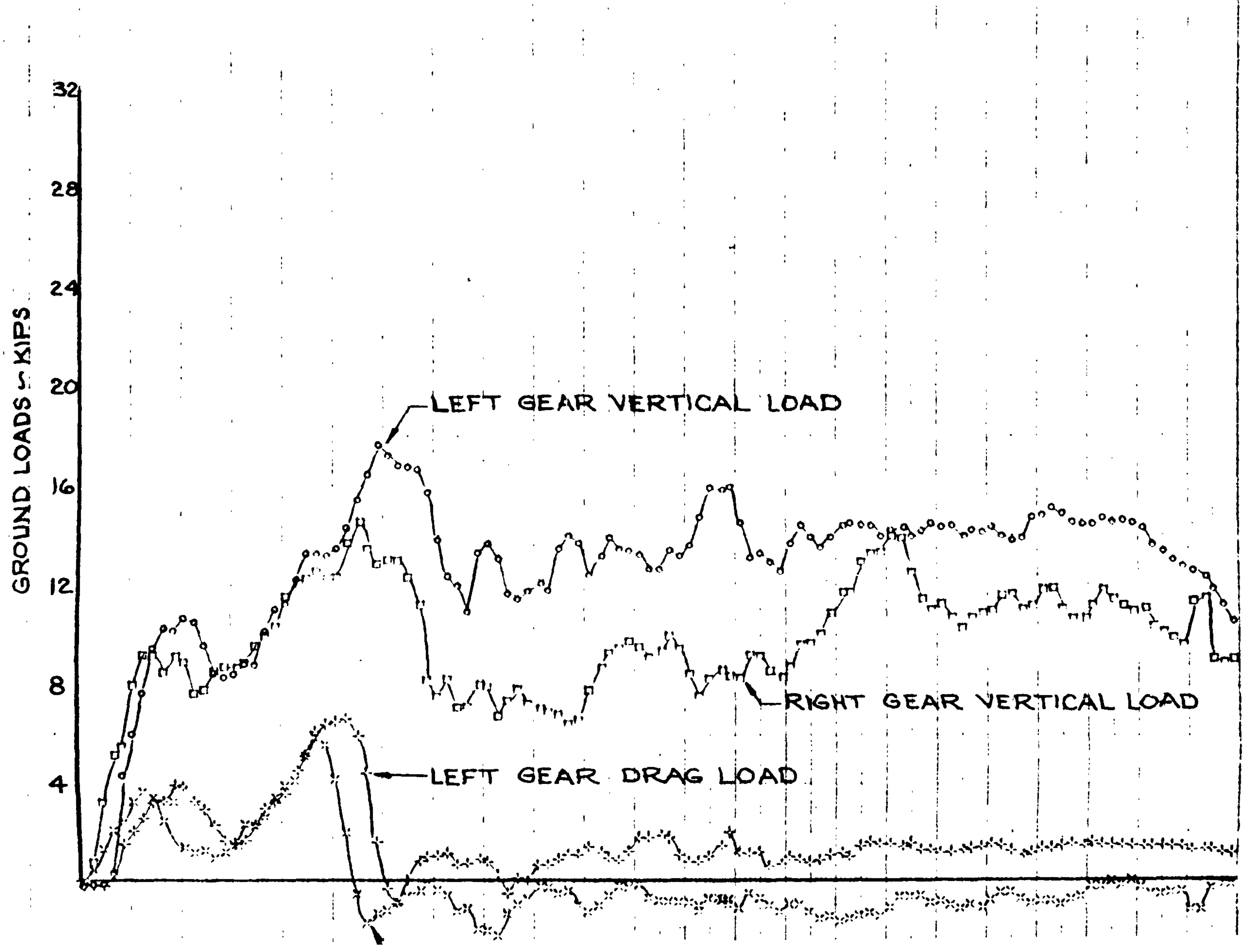
2

FORM 55 SP-1
(REV. 7-64)

K+E ALBANENE 1055 ®

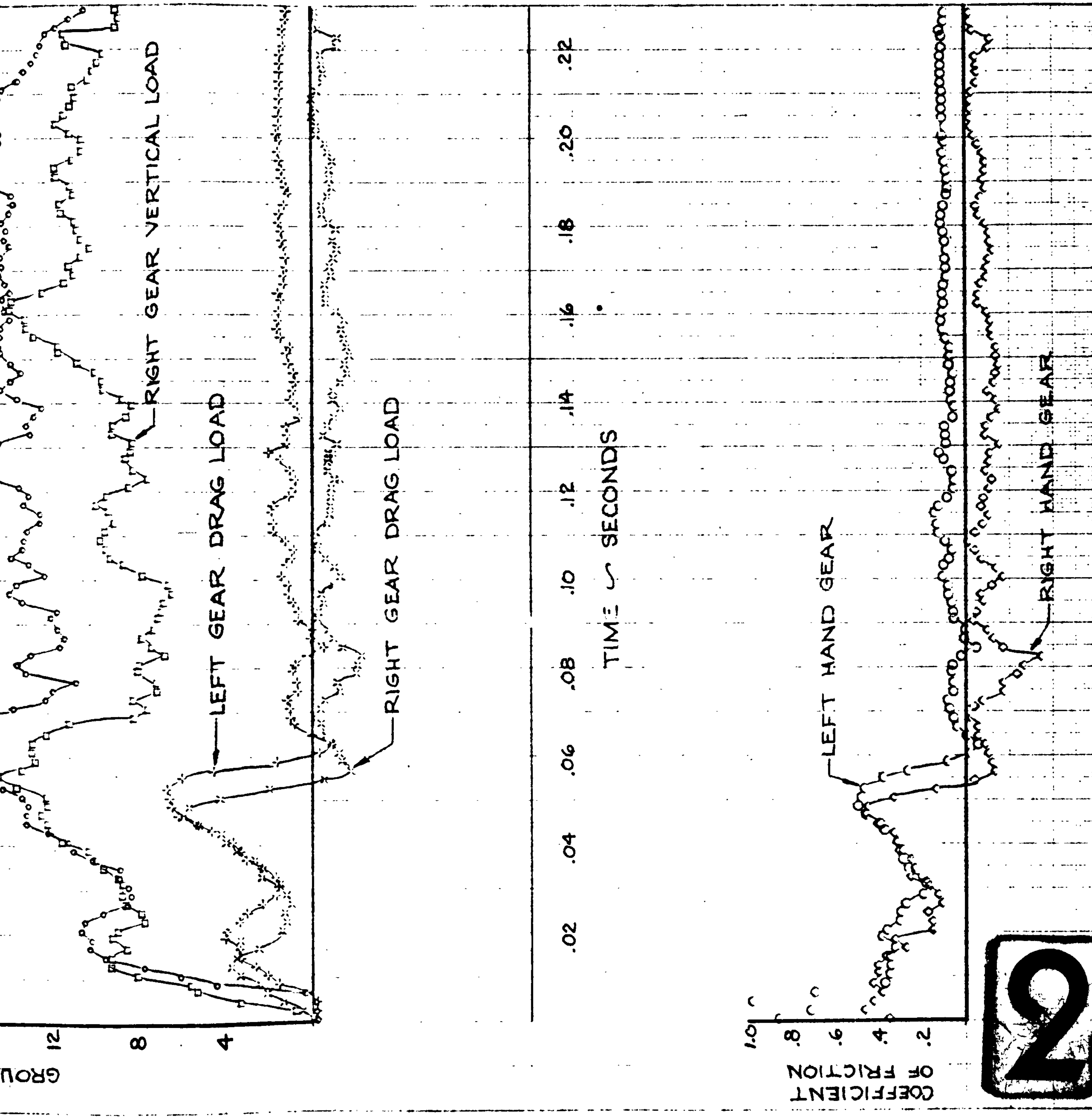
116

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION
LANDING No. 120



PREPARED
CHECKED B
DATE:
TITLE:

PREPARED BY:	DOUGLAS AIRCRAFT COMPANY, INC.	PAGE: 8.5.9
CHECKED BY:	TESTING DIVISION	MODEL: A4D-2
DATE:		REPORT NO.: DEV-3616
TITLE:		



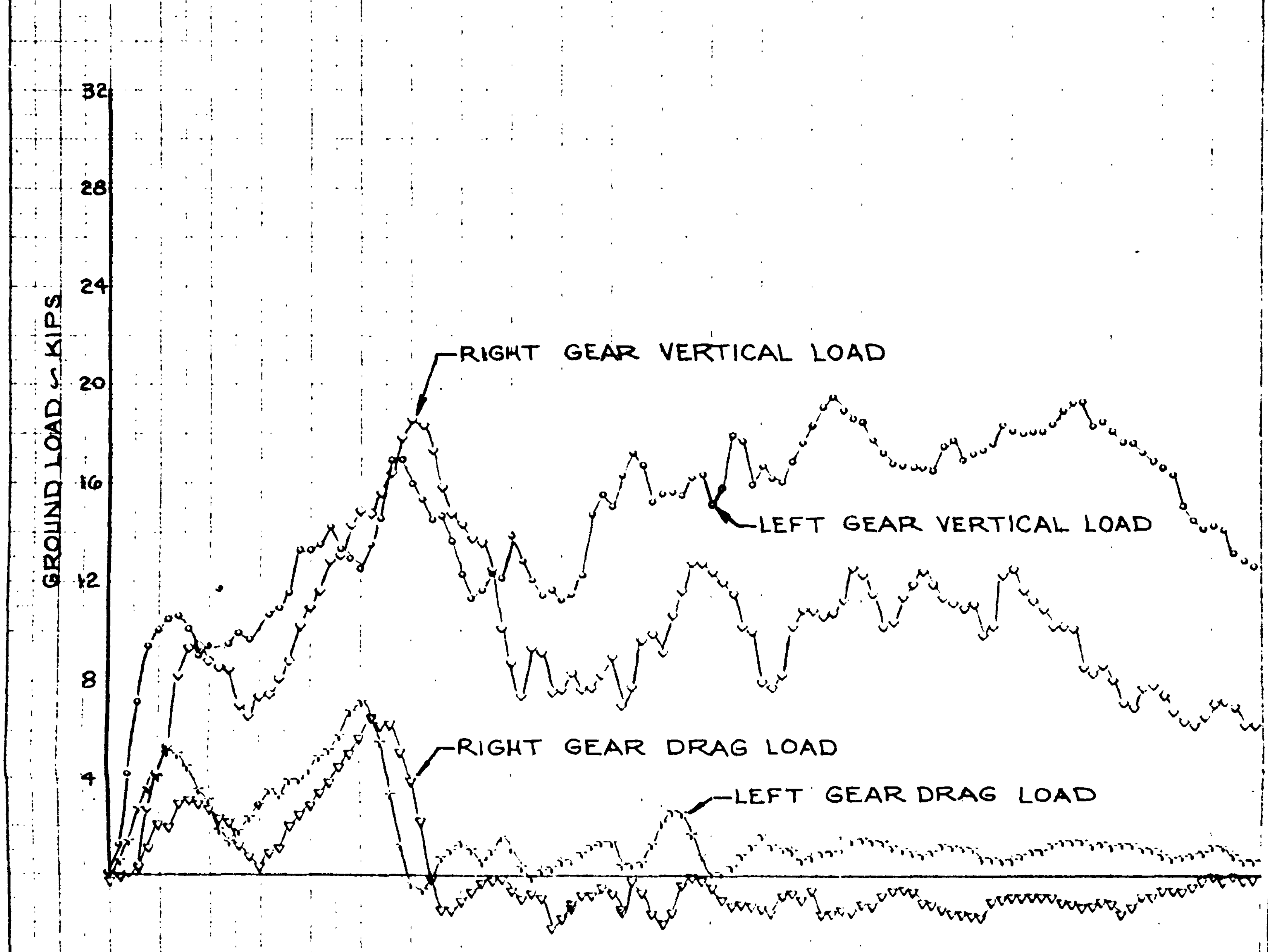
2

117

H-E ALBANENE 160L TRACING PAPER

FORM 28 SP-1 (REV. 7-54)

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION
LANDING No. 131

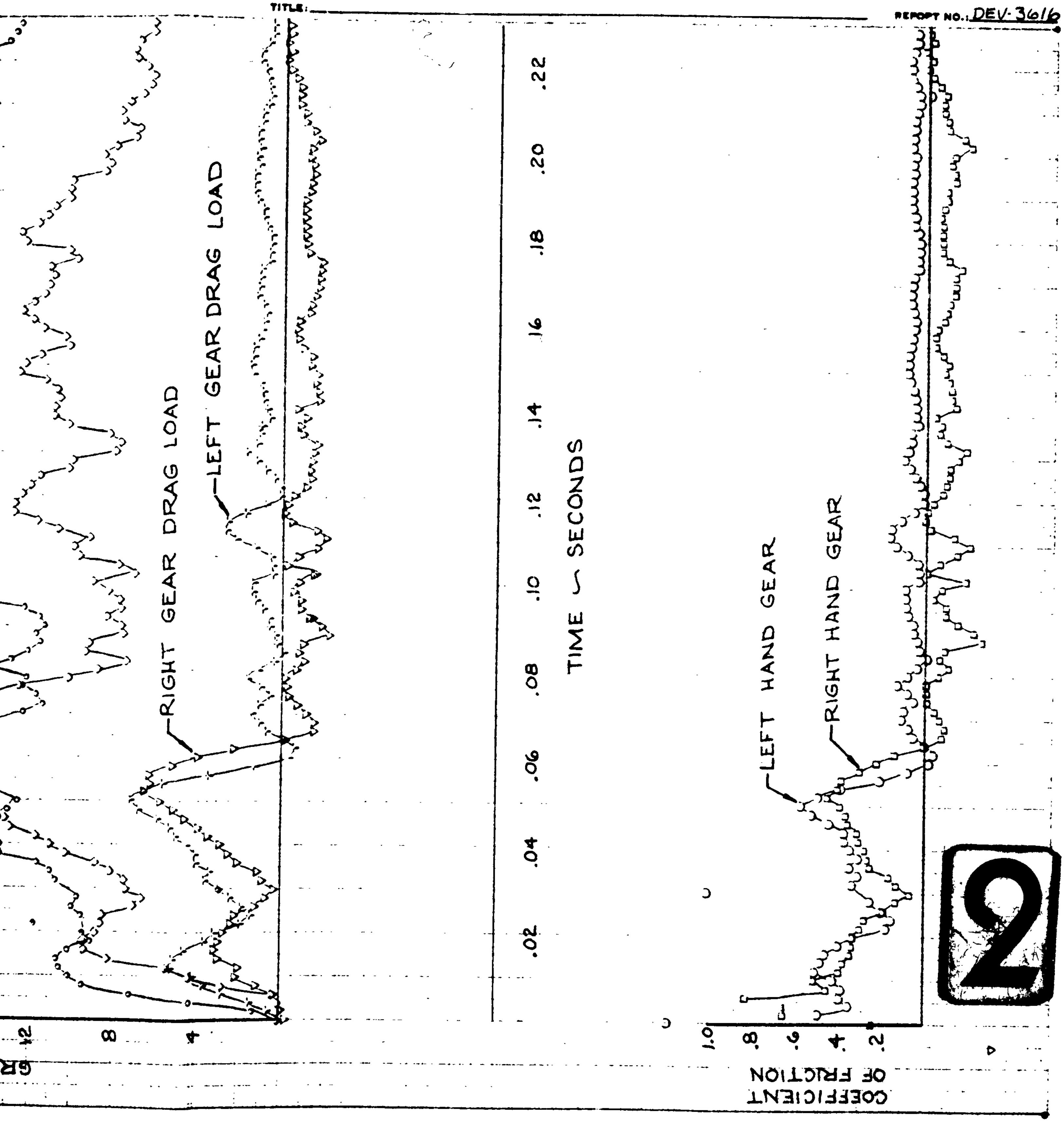


PREPARED BY:
CHECKED BY:
DATE:
TITLE:

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

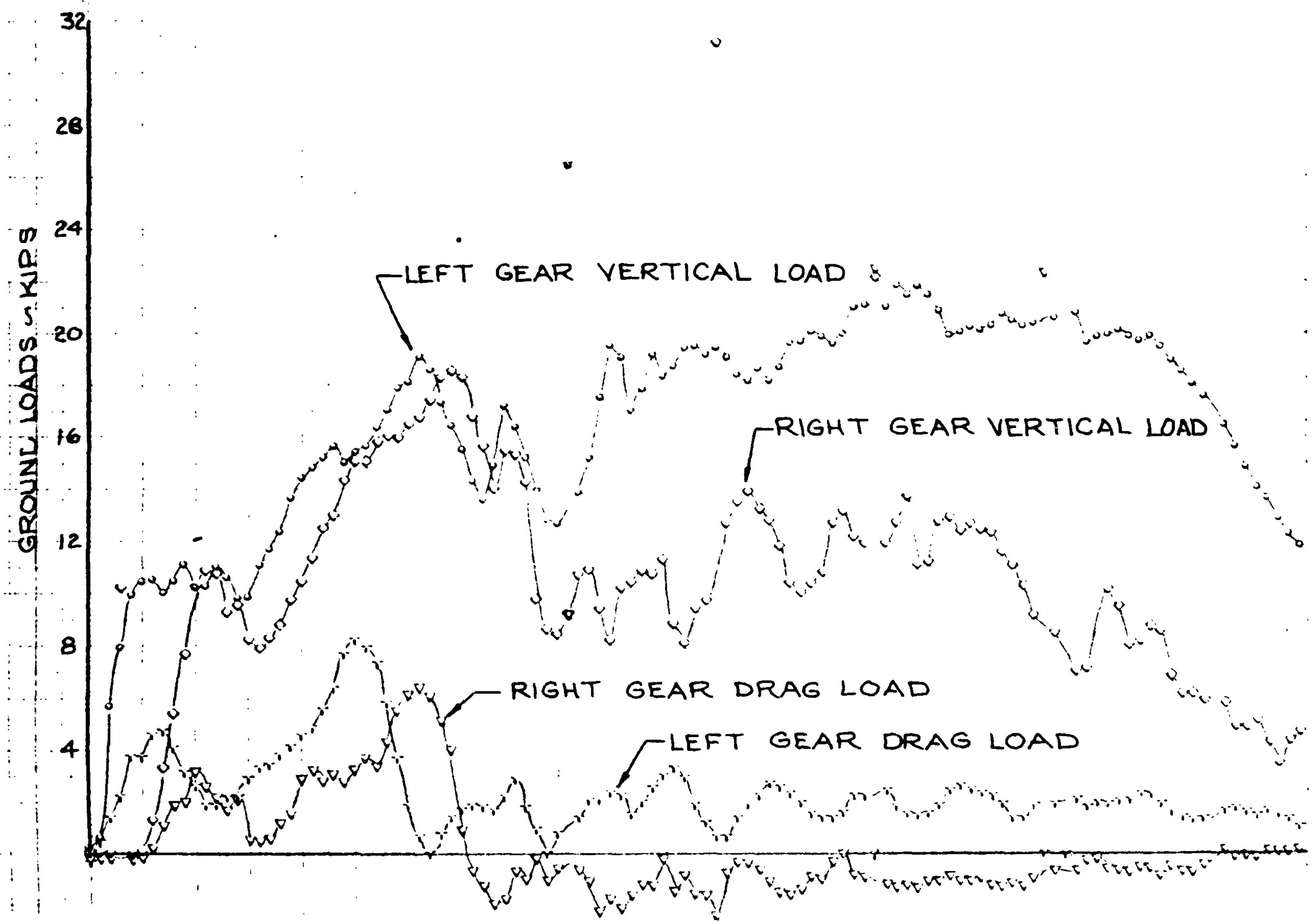
DOUGLAS AIRCRAFT COMPANY, INC.
TESTING DIVISION

PAGE: 8.5.10
MODEL: A4D-2
REPORT NO.: DEV-3616



2

LANDING GEAR GROUND REACTIONS AND COEFFICIENT OF FRICTION
LANDING No. 133



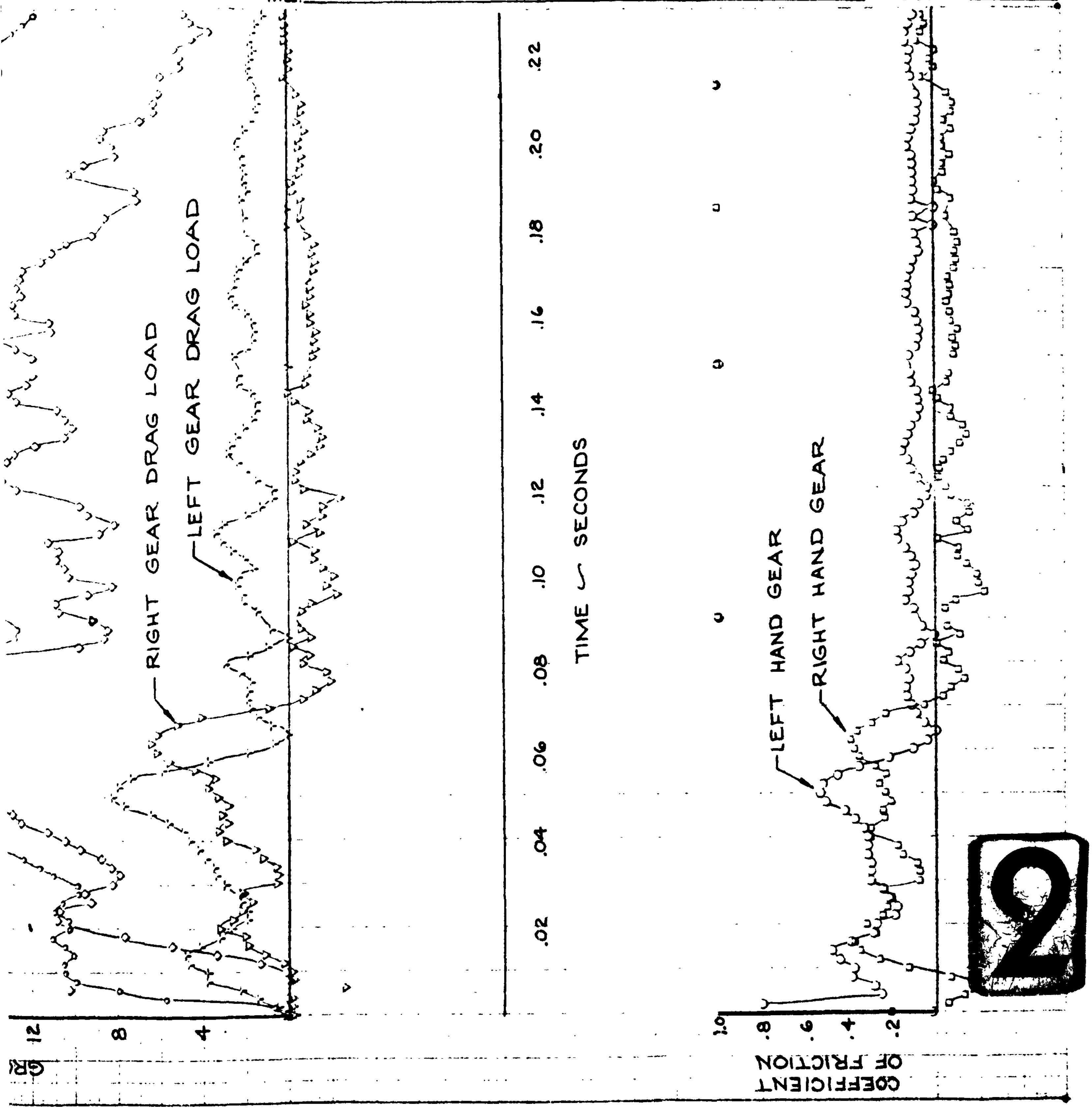
PREPARED BY
CHECKED BY:
DATE
TITLE:

PREPARED BY
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.5.11
MODEL: A4D-2
REPORT NO.: DEV-3616

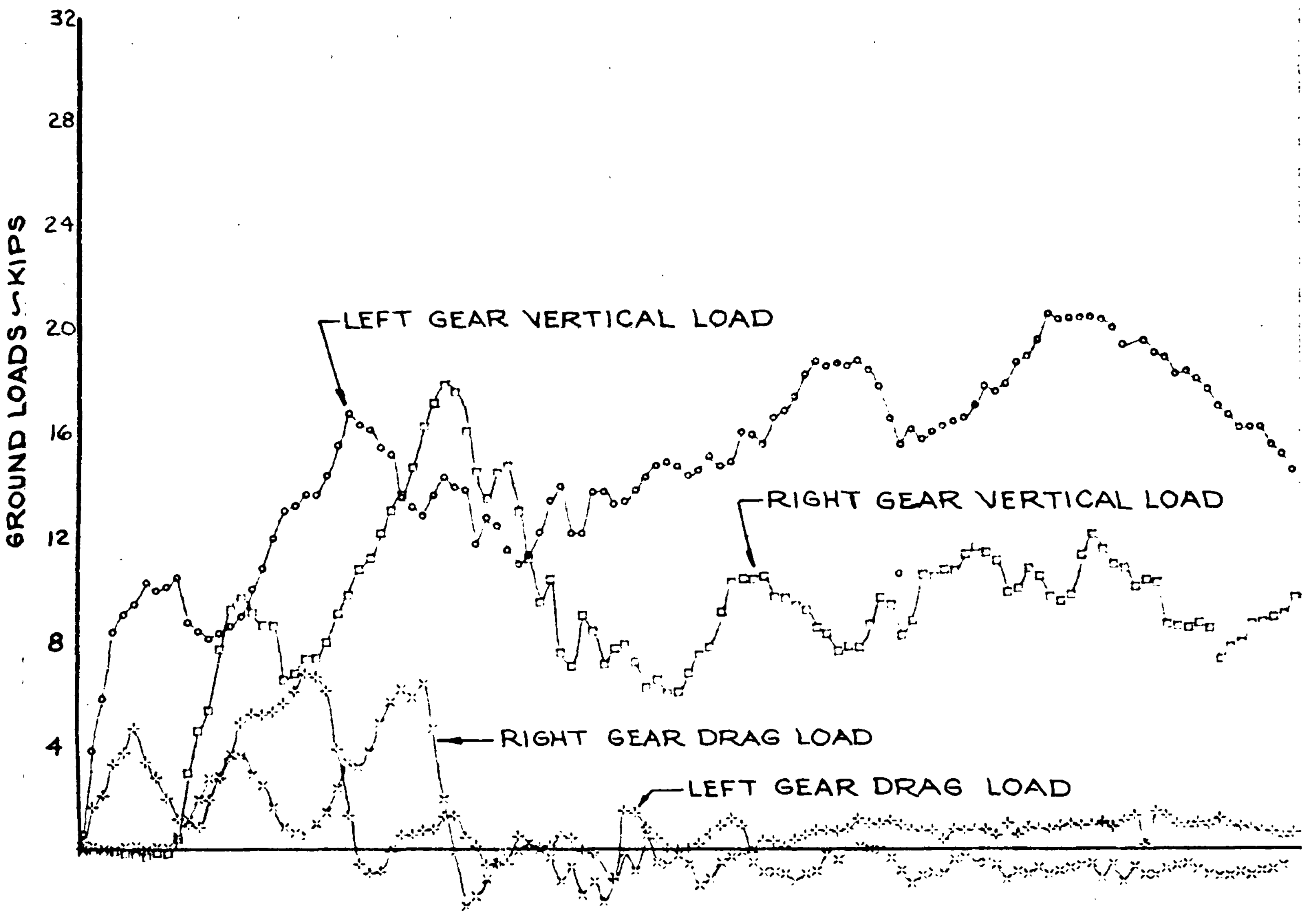


119

K-E ALBANENE 196L ® TRACING PAPER

FORM 26 SP-1 (REV. 7-54)

LANDING GEAR GROUND REACTIONS
AND COEFFICIENT OF FRICTION
LANDING No. 123

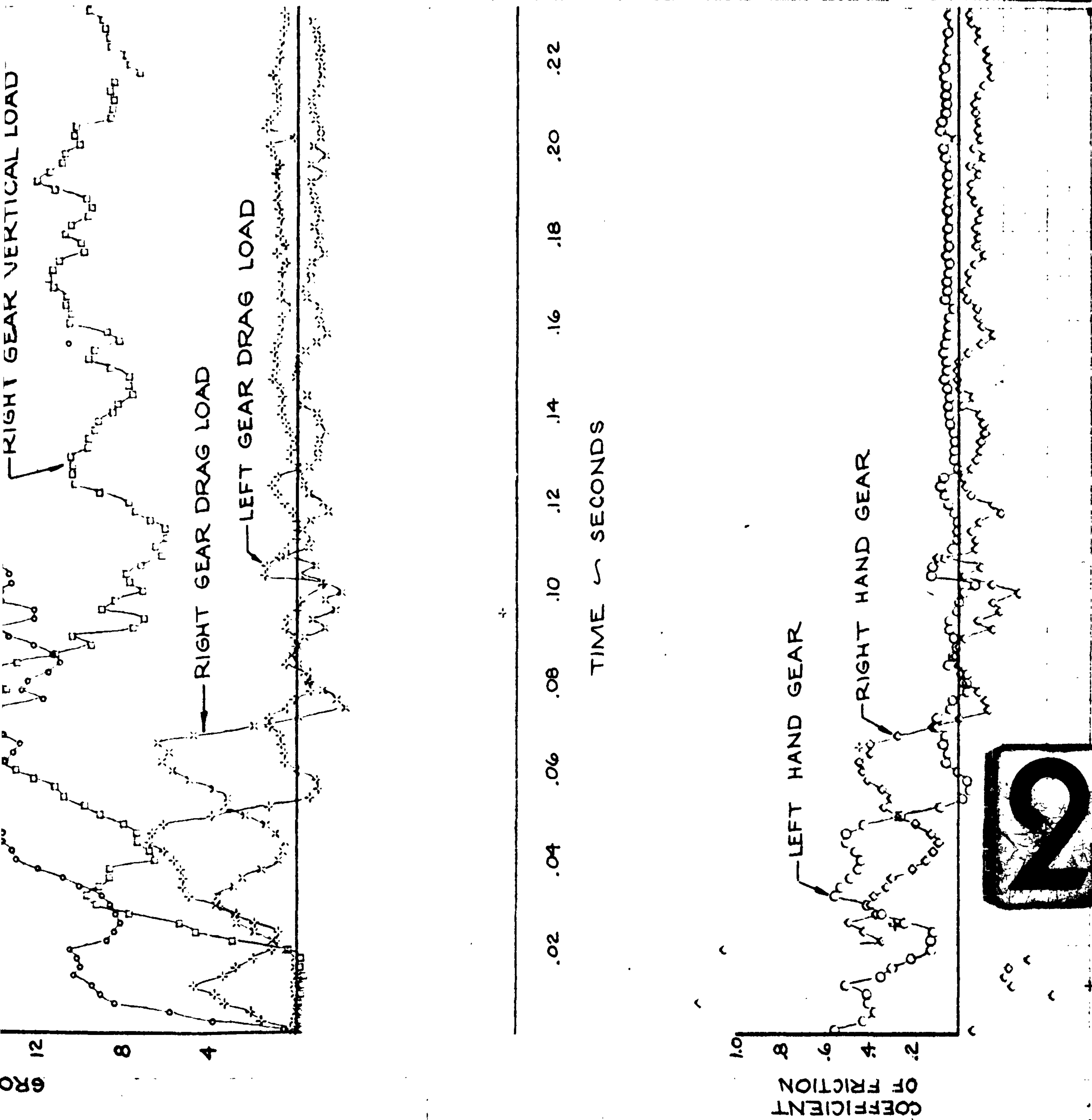


PREPARED BY:
CHECKED BY:
DATE:
TITLE:

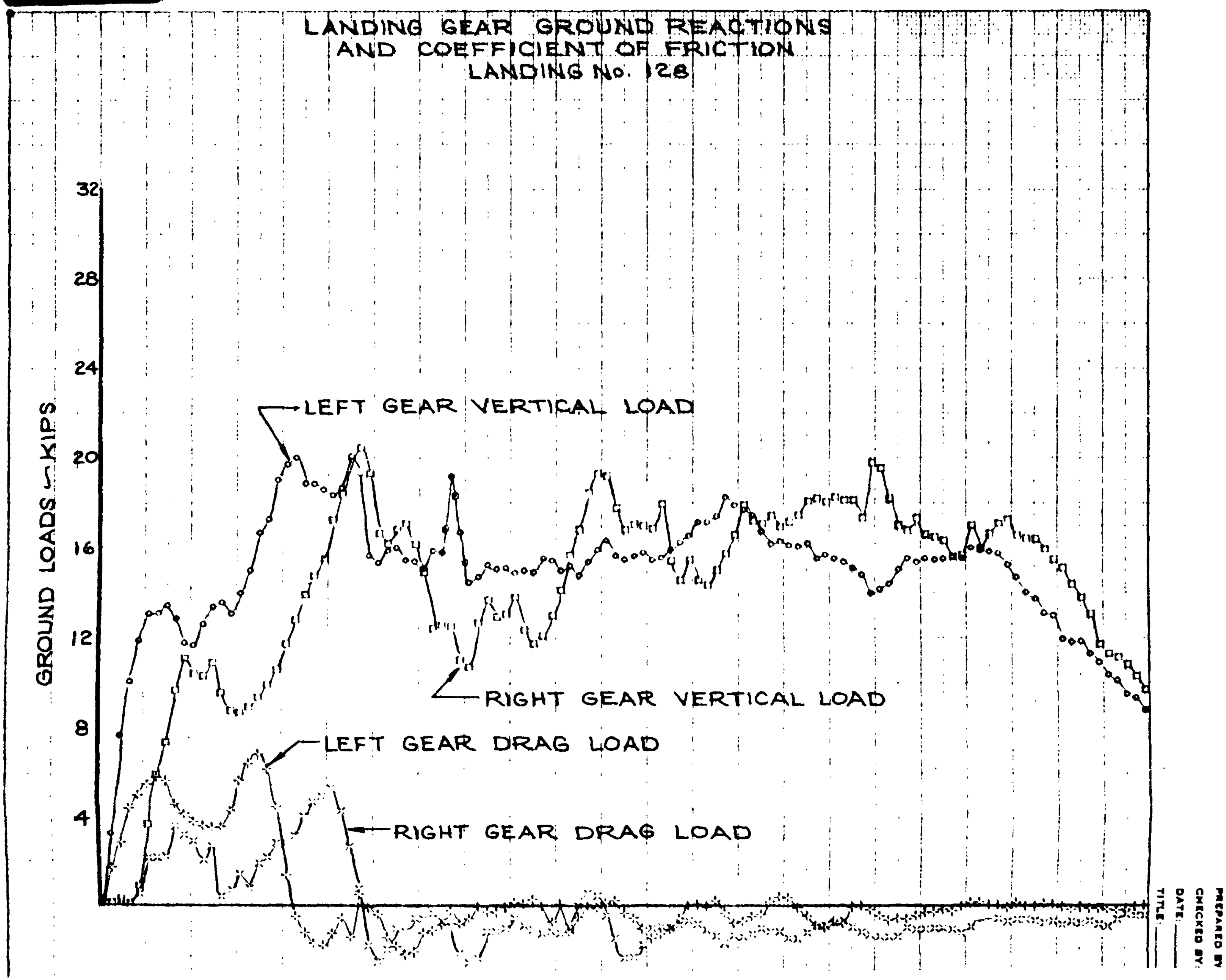
PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.
TESTING DIVISION

PAGE: 8.5.12
MODEL: A4D-2
REPORT NO.: DEV 3616



2



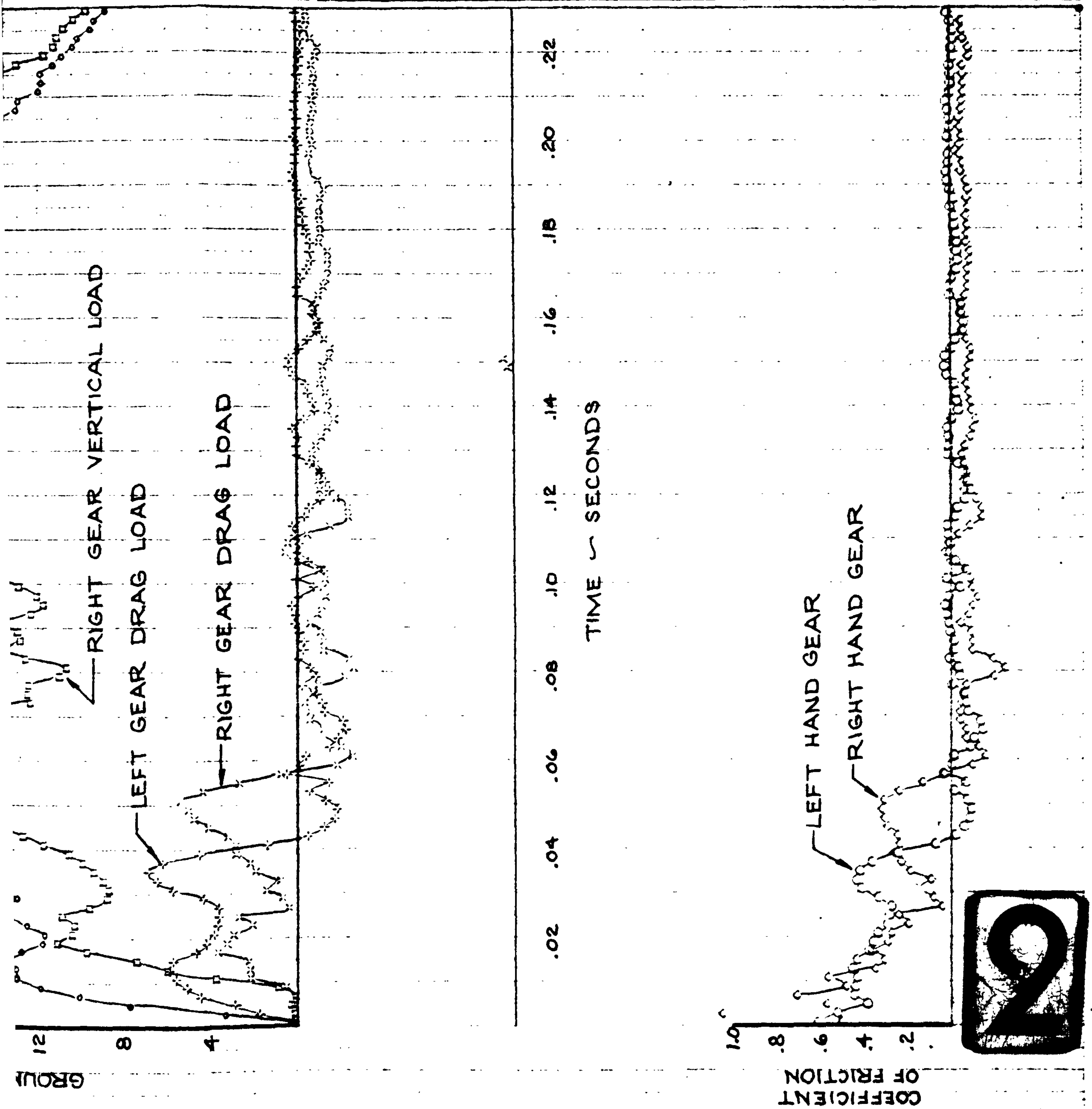
120
K-E ALBANENE 196L

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.5.13
MODEL: A4D-2
REPORT NO.: DEV-3616



FORM 23-6 B
REV. 8-53

PREPARED BY
CHECKED BY
DATE
TITLE LA

Landing Number		1	2	3	4	5	6	7	8	9
Date		9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60
Satisfactory									YES	
Condition Letter									B	
Configuration		←					INSTRUMENTATION STORE ON			
Fuel Remaining ① (LBS)		3120	2910	2750	2570	2360	2160	3050	2910	2750
Gross Weight (LBS)		13725	13515	13355	13175	12965	12765	13655	13515	13355
Runway Surface		NON-SKID								
Mirror Angle (DEG)		3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
Wind (KTS)/Dir. (DEG)		5/315	5/315	5/315	5/315	5/315	5/315	5/90	5/90	5/90
Ambient Temp °F		75-80	75-80	75-80	75-80	75-80	75-80	90	90	90
Left Wheel T.D. Rel. to Zero ② (FT)	Long.	-	20.5	28	45	25	-33	3	-14	-7
	Lat.	-	2 R	0	3 R	1 R	0	3 1/2 R	3 R	3 R
+ INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		-	-	-	-	-	-	-	-	-
③ Sink Speed FT/SEC	TRODI #1	-	15.3	14.5	14.8	-	-	14.4	15.2	16.0
	TRODI #2	-	16.0	-	-	-	-	-	-	14.2
	TRODI #3	-	14.6	14.0	14.0	14.5	-	11.7	12.0	12.5
	TRODI #4	-	-	11.3	11.5	12.5	-	10.0	-	-
	Mitchell Left Wheel	-/-	16.9/13.7	13.3/14.2	13.5/13.0	16.0/14.0	13.7/13.7	-/-	-/-	-/-
	Mitchell Right Wheel	-/-	16.9/13.7	13.3/14.2	13.5/13.0	16.0/14.0	13.7/13.7	-/-	-/-	-/-
	Photoscope Right Wheel								11.0	
Horiz. Speed KTS	SPN-12	121	126	126	127	126	124	125	126	127
	SODI	-	132.1	129.8	131.0	131.6	125.8	-	123.9	130.0
	Mitchell	121.3/-	132.1/132.1	130.1/128.8	131.4/132.1	132.8/132.1	125.5/125.5	986/-	138.7/-	-/-
	Photoscope	-							127.9	
Remarks		T.D. BEYOND AREA							RUNWAY SLOPE - 0.4° LONG. 0.5°(L) LAT	

Notes:

① Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

② Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

121

	6	7	8	9	10	11	12	13	14	15	16	17
-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60
			YES									
			B									
	INSTRUMENTATION STORE ON				℄							
0	2160	3050	2910	2750	2570	2360	2160	3050	2910	2750	2570	2360
5	12765	13655	13515	13355	13175	12965	12765	13655	13515	13355	13175	12965
								CONCRETE				
4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
15	5 / 315	5 / 90	5 / 90	5 / 90	5 / 90	5 / 90	5 / 90	10 / 135	10 / 135	10 / 135	10 / 135	10 / 135
80	75-80	90	90	90	90	90	90	-	-	-	-	-
5	-33	3	-14	-7	-	-	-4	21	17	-10	15	-
R	0	3½ R	3 R	3 R	-	-	2 R	3 R	6 R	4 R	5 R	-
	-	-	-	-	-	-	-	3	-1	7	2½	-
	-	14.4	15.2	16.[illegible]	-	-	-	12.9	13.9	13.8	13.9	-
	-	-	-	14.2	-	-	-	13.2	-	-	-	-
-	-	11.7	12.0	12.5	-	-	14.0	10.0	11.5	12.5	11.0	-
5	-	10.0	-	-	-	-	-	9.0	11.0	-	10.5	-
40	13.7 / 13.7	- / -	- / -	- / -	10.7 / 9.8	- / -	- / -	- / -	14.7 / 10.8	10.9 / 11.5	11.4 / 11.6	8.3 / 11.3
40	13.7 / 13.7	- / -	- / -	- / -	10.7 / 9.8	- / -	- / -	- / -	14.7 / 10.8	10.9 / 11.5	11.3 / 11.6	8.3 / 11.3
			11.0									
	124	125	126	127	128	129	126	126	126	125	128	127
6	125.8	-	123.7	130.0	92.7	133.3	-	129.9	131.1	-	134.3	-
2.1	1255 / 125.5	93.6 / -	138.7 / -	- / -	1281 / 1268	- / -	- / -	- / -	126.8 / 128.1	130.1 / 129.4	125.5 / 127.4	133.5 / 133.5
			127.9									
			RUNWAY SLOPE - 0.4° LONG. 0.5(L) LAT		T.D BEYOND AREA	T.D BEYOND AREA						T.D. BEYOND AREA

...ned laterally as ℄ of runway and
...nally as a line 100 Ft down runway
...rence point of photoscope (see survey

③ Location of TRODI

TRODI #1	Starboard	Fwd	Port Wheel
#2	"	Aft	Port Wheel
#3	Port	Fwd	Starboard Wheel
#4	"	Aft	Starboard Wheel

FORM 28-8-5
REV 8-43

PREPARED BY
CHECKED BY
DATE
TITLE LAN

Landing Number		18	19	20	21	22	23	24	25	26
Date		9-8-60 →						9-13-60 →		
Satisfactory										YES
Condition Letter										B
Configuration		←					INSTRUMENTATION			STORE
Fuel Remaining (1) (LBS)		2160	3120	2990	2750	2570	2360	2990	2750	2570
Gross Weight (LBS)		12765	13725	13595	13355	13175	12965	13605	13365	13185
Runway Surface		CONCRETE →						NON-SKID →		
Mirror Angle (DEG)		3 1/4 →								
Wind (KTS)/Dir. (DEG)		10 / 135	10 / 135	10 / 135	10 / 135	10 / 135	10 / 135	0-5 / 225	0-5 / 225	0-5 / 225
Ambient Temp °F		—	—	—	—	—	—	79		
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	31	13	-13	-17	30	30		-10	-31
	Lat.	4 R	4 R	3.5 R	3 R	3 R	2 R	—	3.5 L	8 L
Rt. Wheel TD Rel to Lt. (+ INDICATES LEFT FIRST)		5	3.5	12	2	3	8	—	-2	-1
Sink Speed FT/SEC (3)	TRODI #1	–	12.2	11.0	13.5	–	–	10.4	12.0	11.8
	TRODI #2	–	–	–	–	–	–	–	–	–
	TRODI #3	–	9.0	8.9	–	12.0	10.5	7.2	–	–
	TRODI #4	–	8.5	–	–	10.5	9.0	8.2	10.1	10.5
	Mitchell Left Wheel	– / –	11.0 / 10.5	9.5 / 10.7	11.4 / 11.8	10.8 / 12.0	11.1 / 11.2	11.1 / 11.4	14.0 / 13.0	13.9 / 12.3
	Mitchell Right Wheel	– / –	11.0 / 10.5	8.2 / 10.7	11.4 / 11.8	10.8 / 12.0	10.8 / 11.2	11.1 / 11.4	14.0 / 13.0	13.9 / 12.3
	Photoscope Left Wheel									11.4
Horiz. Speed KTS	SPN-12	125	126	126	125	124	125	124	123	123
	SODI	–	130.3	130.2	128.5	128.3	129.9	125.9	123.1	–
	Mitchell	130.8 / 128.1	129.0 / 128.8	128.8 / 128.8	128.1 / 128.8	128.8 / 127.4	129.4 / 129.4	124.9 / 126.2	121.9 / 126.2	123.1 / 124.3
	Photoscope									122.5
Remarks								BRAKE JOSY'S CHANGED PRIOR TO LNDG #24	RT. WHEEL ON NON-SKID AFTER PARTIAL SPIN-UP	RUNWAY SLOPE: 0.5° (LONG) 0.1° L (LAT); TAR STRIP @ END OF SPIN-UP

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

(3

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE
TITLE LANDING LOADS INVESTIGATION

TESTING DIVISION

PAGE 8.6.2
MODEL A4D-2 #089
REPORT NO DEV-3616

2	23	24	25	26	27	28	29	30	31	32	33	34
→	→	9-13-60	→	→	→	→	→	→	→	→	→	→
				YES								
				B	-							
→	INSTRUMENTATION		STORE ON ℄		→	→	→	→	→	→	→	→
70	2360	2990	2750	2570	2360	2260	-	3180	2990	2750	2570	2260
15	12965	13605	13365	13185	12975	12875	-	13795	13605	13365	13185	12875
→	→	NON-SKID	→	→	CONCRETE	CONCRETE	NON SKID	→	→	→	→	→
→	→	→	→	→	→	→	→	→	→	→	→	→
35	10 / 135	0-5 / 225	0-5 / 225	0-5 / 225	0-5 / 225	0-5 / 225	0-5 / 225	5-10 / 180	5-10 / 180	5-10 / 180	5-10 / 180	5-10 / 180
	-	77	→	→	→	→	→	80	→	→	→	→
0	30		-10	-31	-45	38	-	-15	42	-4	-	-6
R	2 R	-	3.5 L	8 L	10.5 L	17 L	-	2 L	1 R	2.5 R	-	2.5 R
	8	-	-2	-1	3	-5	-	3	-	-1.5	-	-.5
	-	10.4	12.0	11.8	11.0	-	-	12.8	10.0	8.2	10.1	9.0
	-	-	-	-	-	-	-	-	-	-	-	-
0	10.5	7.2	-	-	-	7.5	-	-	6.7	5.0	-	5.5
5	9.0	8.2	10.1	10.5	-	9.5	-	10.0	8.6	6.5	7.8	7.3
2.0	11.1 / 11.2	11.1 / 11.4	14.0 / 13.0	13.9 / 12.3	- / -	- / -	- / -	10.5 / 13.6	11.8 / 11.5	13.5 / 9.2	11.2 / 10.7	- / -
2.0	10.8 / 11.2	11.1 / 11.4	14.0 / 13.0	13.9 / 12.3 11.4	- / -	- / -	- / -	10.5 / 13.6	- / 11.5	13.5 / 9.2	11.2 / 10.7	- / -
1	125	124	123	123	124	126	-	126	126	127	126	126
.3	129.9	125.9	123.1	-	123.8	-	-	123.8	-	-	-	126.1
7.4	129.4 / 129.4	124.9 / 126.2	121.9 / 126.2	123.1 / 124.3 122.5	126.2 / 123.7	- / -	- / -	128.1 / 130.8	128.1 / 128.1	128.8 / 131.4	128.8 / 125.1	- / -
		BRAKE ASSY'S CHANGED PRIOR TO LNDG #24	RT WHEEL ON NON-SKID AFTER PARTIAL SPIN-UP	RUNWAY SLOPE: 0.5° (LONG) 0.1° L (LAT) TAR STRIP @ BEG OF SPIN-UP			TAXI-IN ARRESTMENT					

ned laterally as ℄ of runway and
nally as a line 100 ft down runway
rence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 28-9 S
(REV. 6-57)

PREPARED BY
CHECKED BY
DATE
TITLE LA

Landing Number		35	36	37	38	39	40	41	42	43
Date		9-13-60	9-14-60							
Satisfactory										
Condition Letter										
Configuration		←					INSTRUMENTATION STORE (			
Fuel Remaining (1) (LBS)		2070	3050	2910	2750	2570	2360	2160	-	-
Gross Weight (LBS)		12685	13665	13525	13365	13185	12975	12775	-	-
Runway Surface		-	CONCRETE	CONCRETE	CONCRETE	NON-SKID	→		-	-
Mirror Angle (DEG)		—	3 3/4							
Wind (KTS)/Dir. (DEG)		5-10 / 180	8-10 / 300							
Ambient Temp °F		80	66							
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	-	7	3	18	-6	55	-32	-	-
	Lat.	-	14 L	15 L	15 L	1 L	0	1 R	-	-
+ INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		-	-5	-3	-3	25	—	2.5	-	-
Sink Speed (3) FT/SEC	TRODI #1	-	13.4	14.2	12.8	15.4	14.8	-	-	-
	TRODI #2	-	10.5	10.4	9.4	10.8	10.8	8.9	-	-
	TRODI #3	-	9.6	10.0	8.5	10.0	-	-	-	
	TRODI #4	-	11.5	11.7	10.5	11.4	12.5	9.0	-	-
	Mitchell Left Wheel	-	-	-	-	-	-	-	-	-
	Mitchell Right Wheel	-	-	-	-	-	-	-	-	-
	Photoscope Left Wheel	-								
Horiz. Speed KTS	SPN-12	-	110	111	108	111	112	111	-	-
	SODI	-	109.7	111.3	108.4	-	113.8	111.0	-	-
	Mitchell	-	-	-	-	-	-	-	-	-
	Photoscope	-								
Remarks		ATTEMPTED TAXI-IN ARRESTMENT - MISSED WIRE						LEFT WHEEL [illegible] TAX TRIP LONGITUDINALLY	ATTEMPTED TAXI-IN ARRESTMENT MISSED WIRE	TAXI-IN ARRESTMENT

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

123

	40	41	42	43	44	45	46	47	48	49	50	51
	→	→	→	→	→	→	→	→	→	→	→	9-15-60
										YES		
										A		
	INSTRUMENTATION STORE ON ℄											→
10	2360	2160	-	-	3120	2910	2660	2520	2360	2160	-	2990
S	12975	12775	-	-	13735	13525	13275	13135	12975	12775	-	13605
D	→	→	-	-	NON-SKID	→	→	→	→	→	-	NON-SKID
	→	→	→	→	→	→	→	→	→	→	→	3 1/4
	→	→	→	→	8-10 / 330	→	→	→	→	→	→	5-10 / 220
	→	→	→	→	→	→	→	→	70	→	→	69
	55	-32	-	-	-33	60	43	-20	-3	-52	-	47
L	0	1 R	-	-	2 R	-	4 L	3 R	0	1 L	-	2 R
	-	2.5	-	-	1	-	-	2.5	1.5	0.5	-	6
	14.8	-	-	-	-	11.5	15.4	-	-	-	-	10.5
	10.8	8.9	-	-	11.2	8.8	14.3	10.7	7.9	10.8	-	12.8
	-	-	-	-	12.2	9.7	14.3	10.9	8.5	10.7	-	-
	12.5	9.0	-	-	-	-	12.5	9.3	-	-	-	11.4
	-	-	-	-	-	-	-	-	-	-	-	13.5 / 13.1
	-	-	-	-	-	-	-	-	-	-	-	[illegible] / 13.1
										11.0		
	112	111	-	-	108	114	118	108	108	109	-	-
	113.8	111.0	-	-	105.6	115.0	118.4	107.6	106.0	108.5	-	132.1
	-	-	-	-	-	-	-	-	-	-	-	131.4 / 132.1
										109.5		
		LEFT WHEEL ON TAR STRIP LONGITUDINALLY	ATTEMPTED TAXI-IN ARRESTMENT MISSED WIRE	TAXI-IN ARRESTMENT		RUNWAY SLOPE: 0.4° (LONG) 0.9° L (LAT)		LEFT WHEEL SKIDDED NO RE-SKID		RUNWAY SLOPE: 0.4° (LONG) 0.2° L (LAT)	TAXI-IN ARRESTMENT	MAIN GEAR TIRES CHANGED PRIOR TO LNDG #51

...ed laterally as ℄ of runway and
...ally as a line 100 ft down runway
...ence point of photoscope (see survey

③ Location of TRODI

TRODI #1	Starboard	Fwd	Port Wheel
#2	"	Aft	
#3	Port	Fwd	Starboard Wheel
#4	"	Aft	

FORM 25 8 9
REV 9-53

PREPARED BY
CHECKED BY
DATE
TITLE LA[illegible]

Landing Number		52	53	54	55	56	57	58	59	60
Date		9-15-60								
Satisfactory										
Condition Letter										
Configuration		←						INSTRUMENTATION		STORE
Fuel Remaining (1) (LBS)		2870	2660	2470	2360	2160	–	3050	2870	2700
Gross Weight (LBS)		13485	13275	13085	12975	12775	–	13665	13485	13315
Runway Surface		NON-SKID	→				–	NON-SKID		
Mirror Angle (DEG)		3 1/4								
Wind (KTS)/Dir. (DEG)		5-10 / 220	→					4-7 / 200		
Ambient Temp °F		69	→					75	→	
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	42	-24	–	47	10	–	12	-18	12
	Lat.	2 R	3 R	–	3 R	1 R	–	1 R	0	2 R
+ INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		–	5	–	5	3	–	5	0	6
(3) Sink Speed FT/SEC	TRODI #1	11.7	12.0	–	9.7	8.6	–	6.8	8.9	9.0
	TRODI #2	13.8	–	–	11.9	10.8	–	9.4	–	11.1
	TRODI #3	11.5	11.2	–	–	9.5	–	7.4	–	9.1
	TRODI #4	11.0	11.7	–	11.2	9.2	–	7.3	10.4	9.4
	Mitchell Left Wheel	11.9 / 13.9	12.2 / 13.0	– –	12.9 / 13.3	10.5 / 11.1	–	8.7 / 8.7	11.2 / 11.0	9.6 / 11.2
	Mitchell Right Wheel	11.9 / 13.9	12.2 / 13.0	– –	12.7 / 13.2	10.5 / 11.1	– –	8.7 / 8.9	11.2 / 11.0	9.6 / 11.2
	Photoscope Left Wheel									
Horiz. Speed KTS	SPN-12	–	–	–	–	–	–	–	–	–
	SODI	129.4	128.9	127.9	–	126.8	–	129.0	127.3	–
	Mitchell	130.1 / 127.4	128.1 / 128.8	124.7 –	130.3 / 130.3	130.1 / 127.4	– –	128.1 / 127.4	125.5 / 125.5	126.8 / 126.8
	Photoscope									
Remarks				TD BEYOND AREA			TAXI-IN ARR[illegible]			

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

	57	58	59	60	61	62	63	64	65	66	67	68
			→									→
												YES
												D
	INSTRUMENTATION		STORE	ON ℄		→						→
00	-	3050	2870	2700	2470	2260	2160	-	3120	2990	2330	2610
75	-	13665	13485	13315	13085	12875	12775	-	13735	13605	13445	13225
→	-	NON-SKID	→				→	-	CONCRETE	→		→
			→				→		4½	→		→
		4-7 / 200										→
→		75	→		77	→	75					→
	-	12	-18	12	-3	47	2	-	21	10	73	40
R	-	1 R	0	2 R	1 R	1 R	4 R	-	10 L	13 L	10 L	12 L
	-	5	0	6	3	7	8.5	-	2	2	1	0
	-	6.8	8.9	9.0	8.8	10.8	9.2	-	11.7	12.8	-	-
	-	8.4	-	11.1	11.2	13.2	11.0	-	14.6	15.7	-	16.2
	-	7.4	-	9.1	9.6	-	8.7	-	12.1	13.0	-	15.1
	-	7.3	10.4	9.4	10.0	11.6	9.1	-	-	-	-	15.6
1	- -	8.7 / 8.1	11.2 / 11.0	9.6 / 11.2	9.6 / 11.3	11.7 / 13.8	9.6 / 11.4	- -	14.6 / 15.2	15.8 / 15.0	- -	16.3 / 15.1
.1	- -	8.7 / 8.9	11.2 / 11.0	9.6 / 11.2	8.6 / 11.3	11.7 / 13.8	9.6 / 11.4	- -	14.6 / 15.2	15.8 / 15.0	- -	16.3 / 15.1
												15.7
	-	-	-	-	-	-	-	-	-	-	-	-
8	-	129.0	127.3	-	-	133.7	129.6	-	126.4	126.0	129.4	129.6
.4	- -	128.1 / 127.1	125.5 / 125.5	126.8 / 126.8	126.8 / 126.1	134.3 / 130.4	130.1 / 129.4	109.2 / 125.5	124.9 / 127.4	126.9 / 126.8	126.8 / -	130.8 / 130.8
												129.0
	TAXI-IN ARREST CIRCUIT							TAXI-IN ARRESTMENT				RUNWAY SLOPE: 0.5 (LONG) 0.4 L (LAT)

...ed laterally as ℄ of runway and
...ally as a line 100 ft down runway
...ence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25-5-B
(REV 8-53)

PREPARED BY
CHECKED BY
DATE
TITLE LANDI

		69	70	71	72	73	74	75	76	77
Landing Number		69	70	71	72	73	74	75	76	77
Date		9-15-60	→	→	→	9-30-60				
Satisfactory			YES							
Condition Letter			D							
Configuration							INSTRUMENTATION			STORE
Fuel Remaining (1) (LBS)		2360	2260	2160	-	2910	2750	2470	2160	-
Gross Weight (LBS)		12975	12875	12775	-	13525	13365	13085	12775	-
Runway Surface		CONCRETE	→	→	-	NON-SKID				
Mirror Angle (DEG)		4 1/2				3 1/4				
Wind (KTS)/Dir. (DEG)		4-7/200				0/-				4/135
Ambient Temp °F		75	→	→	→	73	→	→	→	76
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	33	33	40	-	-82	3	25	-40	-61
	Lat.	13 L	12 L	14 L	-	2 R	2 L	0	4 R	2 R
+ INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		2	0.5	-	-	2	-0.5	0	-2	-
Sink Speed FT/SEC (3)	TRODI #1	12.3	14.7	-	-	-	7.5	7.8	10.0	-
	TRODI #2	14.8	15.0	16.8	-	-	7.2	11.3	-	-
	TRODI #3	11.6	14.5	14.3	-	6.5	6.7	8.5	7.5	-
	TRODI #4	12.5	14.0	14.5	-	-	5.3	6.5	-	-
	Mitchell Left Wheel	14.1/15.0	16.3/15.5	18.4/15.0	-/-	-/-	-/-	-/-		
	Mitchell Right Wheel	14.1/15.0	16.3/15.5	18.4/15.0	-/-	-/-	-/-	-/-		
	Photoscope Left Wheel		14.6							
Horiz. Speed KTS	SPN-12	-	-	-	-	126	-	129	124	124
	SODI	126.2	124.7	109.0	-	-	-	-	-	-
	Mitchell	127.4/128.8	125.5/125.5	132.8/132.1	98.5/98.5	-/-	-/-	-/-		
	Photoscope		124.9							
Remarks			RUNWAY SLOPE: 0.3° (LONG) .4 L (LAT)		TAXI-IN ARRESTMENT	NO INSTRUMENTATION				NO INSTRUMENTATION

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

(3)

3	74	75	76	77	78	79	80	81	82	83	84	85
- 60												
	INSTRUMENTATION			STORE	ON ℄							
10	2750	2470	2160	-	3050	2910	2660	2470	2160	3050	2830	2560
25	13365	13085	12775	-	13665	13525	13275	13085	12775	13665	13445	13175
D												
										3 1/2		
				4 135								
				76								
2	3	25	-40	-61	-21	-38	-25	3	-18	-32	-5	-60
R	2 L	0	4 R	2 R	0	6 R	4 R	7 R	4 R	3 R	6 R	3 R
	-0.5	0	-2	-	3	3	6	-3	-1.5	2	10	3
	7.5	9.3	10.0	-	9.3	9.7	7.7	9.7	10.0	8.4	10.5	-
	7.2	11.3	-	-	-	-	-	10.4	-	-	12.0	-
-	6.7	8.5	9.5	-	-	.5	7.5	8.7	9.5	8.5	10.0	12.0
	5.3	6.5	-	-	-	-	-	7.0	-	-	8.9	-
					NO MITCHELL DATA							
	-	129	124	124	124	124	124	123	121	122	122	124
	-	-	-	-	-	-	-	-	-	-	-	-
					NO MITCHELL DATA							
				NO INSTRUMENTATION				RIGHT WHEEL CONCRETE LEFT WHEEL NON SKID	ROUGH NON-SKID SURFACE FOR RIGHT WHEEL FOR 3 FEET		LEFT WHEEL CONCRETE RIGHT WHEEL NON-SKID	

...ned laterally as ℄ of runway and
...ally as a line 100 Ft down runway
...ence point of photoscope (see survey

③ Location of TRODI

TRODI			
#1	Starboard	Fwd	Port Wheel
#2	"	Aft	Port Wheel
#3	Port	Fwd	Starboard Wheel
#4	"	Aft	Starboard Wheel

2

FORM 2?-? ?
(REV ? ? ?)

PREPARED BY
CHECKED BY
DATE
TITLE LAN

		86	87	88	89	90	91	92	93	94
Landing Number		86	87	88	89	90	91	92	93	94
Date		9-30-60	10-4-60							
Satisfactory									YES	
Condition Letter									H	
Configuration		←					INSTRUMENTATION			STO
Fuel Remaining (1) (LBS)		2260	3120	2910	2750	2530	2310	3120	2990	2830
Gross Weight (LBS)		12875	13735	13525	13365	13145	12925	13735	13605	13445
Runway Surface		NON-SKID								
Mirror Angle (DEG)		3 1/2						4 1/2		
Wind (KTS)/Dir. (DEG)		4 / 135	6-10 / 40					4-7 / 75		
Ambient Temp °F		76	62					65		
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	-19	-24	5	7	-72	-10	-40	-17	-30
	Lat.	5 R	3 R	1 R	2 R	1 R	1 R	0	0	1 R
+INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		2.5	0	7	0.5	5	2.5	1.5	0.5	1.5
(3) Sink Speed FT/SEC	TRODI #1	12.3	8.2	11.5	12.2	8.7	13.0	14.0	15.0	16.0
	TRODI #2	-	-	12.0	12.5	-	14.0	-	17.0	-
	TRODI #3	12.0	-	10.3	10.3	-	-	-	-	-
	TRODI #4	10.9	5.4	9.4	7.6	-	10.9	-	12.5	-
	Mitchell Left Wheel	- / -	9.1 / -	11.1 / 11.7	13.3 / 13.6	- / -	11.4 / 12.4	- / -	16.2 / 17.4	16.7 / 15.8
	Mitchell Right Wheel	- / -	9.1 / -	11.1 / 11.7	13.3 / 13.6	- / -	11.4 / 12.4	- / -	16.2 / 17.4	16.7 / 15.8
	Photoscope Left Wheel	-							15.3	
Horiz. Speed KTS	SPN-12	127	112	-	-	-		-	-	-
	SODI	-	-	-	-	-	121.8	130.7	130.7	127.9
	Mitchell	- / -	123.1 / 123.1	124.7 / 123.7	121.9 / 121.9	120.1 / 118.9	120.1 / 120.1	123.1 / 127.4	127.4 / 128.8	126.2 / 125.5
	Photoscope								131.1	
Remarks			TAR STRIP 4 FEET AFTER TOUCHDOWN				TAR STRIP 10 FEET AFTER TOUCHDOWN			TOUCHDOWN ON CONCRETE SPIN-UP COMPLETED ON NON-SKID

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

(3

	91	92	93	94	95	96	97	98	99	100	101	102
			YES		YES							
			H		H							
	INSTRUMENTATION STORE ON ℄											
0	2310	3120	2990	2830	2660	2470	2260	3050	2910	2750	2570	2360
5	12925	13135	13005	13445	13275	13085	12875	13665	13525	13365	13185	12975
								CONCRETE	NON-SKID			
		4½						3½				
		4-7/75						0-3/90				
		65						70				
	-10	-40	-17	-30	-8	6	-24	55	-24	-25	-35	-7
R	1R	0	0	1R	5R	2L	4R	5R	1R	1R	2R	2R
	25	1.5	0.5	1.5	0.5	3	2.5	3	5	6	6	8
	13.0	14.0	15.0	16.0	15.5	16.5	16.5	1?.0	12.5	10.7	13.0	10.7
	14.0	-	17.0	-	16.5	18.0	-	10.1	-	-	-	11.4
	-	-	-	-	13.9	15.3	-	-	-	-	-	-
	10.9	-	12.5	-	12.7	13.9	14.1	-	9.7	7.9	-	7.4
	11.4/12.4	-/-	16.2/17.4	16.7/15.8	16.7/16.3	18.1/18.3	18.0/19.1	13.1/13.2	13.7/13.6	11.4/11.0	10.2/11.7	-/-
	11.4/12.4	-/-	16.2/17.4	16.7/15.8	16.7/16.3	18.1/18.3	18.0/19.1	13.1/13.2	13.9/13.6	11.4/11.0	10.2/11.7	-/-
			15.3		14.7							
	-	-	-	-	-	-	-	-	-	-	-	-
	121.8	130.7	130.7	127.9	-	128.9	-	130.2	128.8	124.3	124.4	126.1
3.9	120.1/120.1	123.1/127.4	127.4/128.8	126.2/125.5	128.3/128.1	127.4/128.1	124.7/124.9	131.4/130.8	126.9/125.5	123.1/122.5	122.5/121.9	-/-
			131.1		128.7							
	TAX STRIP 10 FEET AFTER TOUCHDOWN			TOUCHDOWN ON CONCRETE SPIN-UP COMPLETED ON NON-SKID		LEFT WHEEL CONCRETE RIGHT WHEEL NON-SKID	NEW LEFT TIRE PRIOR TO LNDG 17 TIRE PRESS 210 ... PSI	TIRE PRESS 210 PSI	TIRE PRESS 210 PSI INITIAL 2 FEET ON SPIN-UP ON PAINTED CONCRETE LEFT WHEEL	TIRE PRESS 210 PSI INITIAL 5 FEET OF SPIN-UP ON PAINTED CONCRETE LEFT WHEEL	TIRE PRESS - 210 PSI	TIRE PRESS 210 PSI

...ed laterally as ℄ of runway and
...ally as a line 100 Ft down runway
...ence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25 5 9
REV 8-...

PREPARED BY
CHECKED BY
DATE
TITLE L

Landing Number		103	104	105	106	107	108	109	110	111
Date		10-4-60	→					→	10-6-60	→
Satisfactory										
Condition Letter										
Configuration		← INSTRUMENTATIC								
Fuel Remaining ① (LBS)		2160	3120	2990	2830	2660	2470	2160	2990	2750
Gross Weight (LBS)		12775	13735	13605	13445	13275	13085	12775	13605	13365
Runway Surface		NON-SKID	→							
Mirror Angle (DEG)		3 1/2	→					→	3 3/4	
Wind (KTS)/Dir. (DEG)		0-3 / 90						→	10 / 235	
Ambient Temp °F		70	71	71	68	→			73	→
Left Wheel T.D. Rel. to Zero ② (FT)	Long.	-23	-9	-41	1	-27	7	8	-32	-33
	Lat.	2 R	4 R	1 R	3 R	6 R	5 R	0	4 R	1 R
Rt. Wheel TD Rel to Lt. (+INDICATES LEFT FIRST)		3	4.5	4	2	4.5	10	4	7	-0.5
Sink Speed FT/SEC ③	TRODI #1	12.1	12.0	13.1	10.3	11.3	13.4	9.4	-	-
	TRODI #2	-	13.3	-	10.7	-	12.9	9.4	-	-
	TRODI #3	-	-	-	-	-	9.0	7.8	-	-
	TRODI #4	10.0	9.9	-	7.1	8.4	8.2	6.8	6.4	7.7
	Mitchell Left Wheel	13.3 / 14.9	12.9 / 12.6	- / -	10.9 / 10.7	11.3 / 10.9	13.1 / 12.6	10.3 / 10.3	- / 11.2	- / 10.1
	Mitchell Right Wheel	13.3 / 14.9	12.9 / 12.6	- / -	10.9 / 10.7	11.3 / 10.9	13.1 / 12.6	10.3 / 10.3	- / 11.2	- / 10.1
	Photoscope Left Wheel									
Horiz. Speed KTS	SPN-12	-	-	-	-	-	-	-	110.5	114.0
	SODI	120.6	112.7	111.6	112.9	-	-	110.9	-	-
	Mitchell	118.4 / 119.6	110.6 / 110.1	109.6 / 111.6	110.6 / 111.1	107.3 / 107.3	113.1 / 112.1	108.7 / 107.6	11[illegible] / 116.7	113.6 / 118.4
	Photoscope									
Remarks		← LEFT TIRE PRESS 210 PSI → INITIAL 1.5 FEET OF LEFT WHEEL SPIN-UP ON PAINTED CONCRETE THEN THR STRIP				INITIAL 1.5 FEET OF LEFT WHEEL SPIN-UP ON CONCRETE				LEFT WHEEL - PAINTED CONCRETE RIGHT WHEEL CONCRETE AND NON-SKID

Notes:

① Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

② Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

127

7	108	109	110	111	112	113	114	115	116	117	118	119
→		→	10-6-60 →								→	10-11-60
						YES	YES			YES		
						E	G			G		
INSTRUMENTATION STORE ON ℄ →												
60	2470	2160	2990	2750	2470	2260	3050	2990	2660	2470	2260	2660
75	13085	12775	13605	13365	13085	12875	13665	13605	13275	13085	12875	13275
→												
→		→	3 3/4 →			→	5 →				→	3 3/4
/	/	/ →	10/235	/	/	/	/	/	/	/	/ →	6-10/250
→		→	73 →			→	76 →				→	83
7	7	8	-32	-33	-14	-7	-8	27	0	8	13	3
R	5 R	0	4 R	1 R	3 R	0	5 R	3 R	4 R	2 R	1 R	4 R
5	10	4	7	-0.5	4	3.5	0	2	4.5	2	4	0
2	13.4	9.4	-	-	-	-	16.0	13.5	17.0	14.5	16.5	10.2
	12.9	9.4	-	-	-	-	16.5	15.0	17.0	15.0	17.0	11.0
	9.0	7.8	-	-	12.4	10.7	15.7	12.3	16.0	13.2	15.6	8.8
/	8.2	6.8	6.4	7.7	12.6	11.2	14.8	13.4	16.0	13.3	15.3	9.9
0.9	13.1/12.6	10.3/10.3	-/11.2	-/10.1	13.5/14.7	14.4/13.8	18.6/17.5	15.5/15.5	19.0/18.0	16.2/16.8	18.5/18.5	-/-
0.9	13.1/12.6	10.3/10.3	-/11.2	-/10.1	13.5/14.7	14.4/13.3	18.6/17.5	15.0/15.5	19.0/18.0	16.2/16.8	18.5/18.5	-/-
						11.9	15.8			15.8		
	-	-	110.5	114.0	107	113	110	109	110	109	110	-
	-	110.9	-	-	-	-	-	-	-	-	-	-
7.3	113.1/112.1	108.7/109.6	110.6/116.2	113.6/113.4	110.8/111.1	114.6/113.6	113.6/112.6	1[illegible]7.6/110.1	113.1/113.1	110.1/112.1	113.1/112.6	-/-
						113.1	110.3			110.1		
PSI → ON CONCRETE		→		LEFT WHEEL - PAINTED CONCRETE; RIGHT WHEEL CONCRETE AND NON-SKID		RUNWAY SLOPE: 0.4° (LONG) 0.3° L (LAT)	RUNWAY SLOPE: 0.5° (LONG) 0.3° L (LAT); RIGHT WHEEL - TAR STRIP UNDER NON SKID	RAN OFF THE NON-SKID SURFACE @ END OF TURN-UP		RUNWAY SLOPE: 0.5° (LONG) 0.2° L (LAT)		

...ned laterally as ℄ of runway and
...nally as a line 100 ft down runway
...rence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25 ...
REV ...

PREPARED BY
CHECKED BY
DATE
TITLE LA

Landing Number		120	121	122	123	124	125	126	127	128
Date		10-11-60	→							→
Satisfactory		YES	YES				YES	YES		
Condition Letter		E	C				C	A		
Configuration		←						INSTRUMENTATION		
Fuel Remaining (1) (LBS)		2470	2260	–	3120	2990	2830	2860	2360	2160
Gross Weight (LBS)		13085	12875	–	13735	13605	13445	13275	12975	12715
Runway Surface		NON-SKID	NON-SKID	CONCRETE	→					→
Mirror Angle (DEG)		3 3/4	3 3/4	5	→					→
Wind (KTS)/Dir. (DEG)		6-10 / 250	6-10 / 250							
Ambient Temp °F		83	83	85	→					→
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	2	-63	-4	3	2	3	9	11	5
	Lat.	1 L	4 R	14 L	16 L	16 L	14 L	16 L	15 L	13 L
+INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		-.75	0	1.5	3	5	3	1.5	7	1.5
(3) Sink Speed FT/SEC	TRODI #1	12.5	14.5	-	–	14.0	14.5	17.0	14.3	14.0
	TRODI #2	12.5	–	14.1	11.5	14.5	15.2	–	15.2	14.7
	TRODI #3	10.5	–	13.5	11.7	12.7	12.8	–	–	-
	TRODI #4	11.6	13.4	15.0	13.0	13.2	13.3	16.2	14.0	13.8
	Mitchell Left Wheel				NO MITCHELL DATA					
	Mitchell Right Wheel									
	Photoscope Left Wheel	12.0	12.5		10.7		13.9	15.5		13.4
Horiz. Speed KTS	SPN-12	–	–	–	–	–	–	–	–	–
	SODI	–	104.6	106.2	114.2	–	113.4	114.0	127.5	128.6
	Mitchell				NO MITCHELL DATA					
	Photoscope	110.7	105.1		113.9		113.0	110.7		109.1
Remarks		RUNWAY SLOPE: .35° (LONG) 0.3° L (LAT)	RUNWAY SLOPE: 0.2° (LONG) 0.5° L (LAT)		RUNWAY SLOPE: 0.4° (LONG) 0.0° (LAT)		RUNWAY SLOPE: 0.3° (LONG) 0 LAT			RUNWAY SLOPE: 0.4° (LONG) 0.0° (LAT)

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

(3

128

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE
TITLE LANDING LOADS INVESTIGATION

TESTING DIVISION

PAGE 8.6.8
MODEL A4D-2 #089
REPORT NO DEV-3616

	125	126	127	128	129	130	131	132	133	134	135	136
	→			→	10-12-60	→						→
	YES	YES					YES		YES			
	C	A					F		F			
	INSTRUMENTATION STORE ON ℄						→					
0	2830	2860	2360	2160	3120	2990	2750	2570	2360	2160	2660	2470 *
05	13445	13275	12975	12715	13735	13605	13365	13185	12975	12775	13275	13085
				→	NON-SKID	→						→
				→	3 1/2	→						→
				→	6 / 0	→				→	6-3 / 0	6-8 / 0
				→	70					→	72	72
	3	9	11	5	6	-6	19	19	20	16	-33	59
L	14 L	16 L	15 L	13 L	0	1 R	1 R	2 L	1 R	0	0	1 R
	3	1.5	7	1.5	.75	25	0.5	0.5	0	3.5	3	3
0	14.5	17.0	14.3	14.0	11.5	13.0	11.5	11.3	12.0	9.0	12.4	–
5	15.2	–	15.2	14.7	13.0	15.0	12.5	13.0	14.0	10.1	–	–
7	12.8	–	–	-	11.1	11.8	-	11.0	11.4	7.9	–	–
2	13.3	16.2	14.0	13.8	11.1	12.5	10.8	–	11.9	8.4	12.5	–
ELL DATA						→	10.8 / 12.3	12.5 / 12.3	13.8 / 14.3	10.8 / 10.4	- / -	12.8 / 12.4
						→	10.8 / 12.3	12.5 / 12.3	13.8 / 14.3	10.8 / 10.4	- / -	12.8 / 12.4
	13.9	15.5		13.4			12.0		12.5			
	–	–	–	–	–	–	–	–	–	–	–	–
	113.4	114.0	127.5	128.6	127.0	128.0	124.5	–	–	–	–	110.2
HELL DATA						→	128.1 / 127.0	133.1 / 129.4	133.1 / 131.4	111.1 / 110.6	105.0 / 100.0	105.9 / 105.0
	113.0	110.7		109.1			127.9		128.5			
	RUNWAY SLOPE: 0.3° (LONG) 0 LAT			RUNWAY SLOPE: 0.4° (LONG) 0.0° (LAT)			RUNWAY SLOPE 0.4° (LONG) 0.6° L (LAT) INITIAL 15 FEET OF RIGHT WHEEL SPIN-UP ON NON-SKID		RUNWAY SLOPE: 0.4° (LONG) 0.6 L (LAT) INITIAL 15 FEET OF RIGHT WHEEL SPIN-UP ON NON-SKID			

...hed laterally as ℄ of runway and
...nally as a line 100 Ft down runway
...rence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25-6-B
REV 8 ...

PREPARED BY
CHECKED BY
DATE
TITLE LAN

Landing Number		137	138	139	140	141	142	143	144	145
Date		10-12-60	10-22-60							
Satisfactory										
Condition Letter										
Configuration		℄ STORE ONLY					INSTRUMENTATION S... TV10 - 150 GALLON EXT. TANK			
Fuel Remaining (1) (LBS)		2160	1560	1450	1330	1160	1660	1500	1450	1280
Gross Weight (LBS)		12775	14475	14365	14245	14075	14575	14415	14365	14195
Runway Surface		NON-SKID	CONCRETE							
Mirror Angle (DEG)		3 1/2	3 3/4	3 3/4	3 3/4	3	3	3	3	3 1/4
Wind (KTS)/Dir. (DEG)		6-8 / 0	0-5 / 45	0-5 / 45	0-5 / 45	5-7 / 45	5-10 / 45	/	/	/
Ambient Temp °F		72	59	59	57	63				
Left Wheel T.D. Rel. to Zero (2) (FT)	Long.	-27	-39	40	-36	-75	-120	-42	-98	-1
	Lat.	2 R	19 L	17 L	21 L	12 L	14 L	12 L	14 L	12 L
+INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		3	0	15	1	3	-6	4	0.5	1
(3) Sink Speed FT/SEC	TRODI #1	10.0	11.8	-	10.5	9.8	-	11.0	8.5	9.9
	TRODI #2	10.7	-	-	11.9	-	-	-	-	11.6
	TRODI #3	11.1	-	-	-	-	-	11.5	-	10.2
	TRODI #4	-	-	-	-	-	-	-	-	10.3
	Mitchell Left Wheel	11.3 / 12.2	- / -	- / -	- / -	- / -	- / -	- / -	- / -	12.5 / -
	Mitchell Right Wheel	11.3 / 12.2	- / -	- / -	- / -	- / -	- / -	- / -	- / -	12.5 / -
	Photoscope Left Wheel									
Horiz. Speed KTS	SPN-12	-	135	142	135	139	137	135	133	132
	SODI	107.4	132.4	139.9	132.7	138.1	-	-	131.6	133.0
	Mitchell	108.7 / 109.2	- / -	- / -	- / -	139.5 / 141.0	137.2 / 137.2	132.1 / 132.8	132.1 / 132.8	133.5 / 134.3
	Photoscope									
Remarks		LEFT WHEEL: PAINTED CONCRETE RIGHT WHEEL: NON-SKID		NO INSTRUMENTATION	INSTRUMENTATION 'ON' AFTER IMPACT					

621

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

(3

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE
TITLE LANDING LOADS INVESTIGATION

TESTING DIVISION

MODEL A4D-2 #089
REPORT NO DEV-3616

	142	143	144	145	146	147	148	149	150	151	152	153
					YES				YES	YES	YES	YES
					I				J	I	K	J
	INSTRUMENTATION STORE ON Q RACK											
	TWO - 150 GALLON EXT. TANKS (FULL JP-5) ON WING RACK											
	1660	1500	1450	1280	1040	1660	1450	1390	1220	980	2070	1500
5	14575	14415	14365	14195	13955	14575	14369	14305	14135	13895	14985	14415
	3	3	3	3 1/4								
5	5-10/45					0.4/90				0.6/90	0/-	0/-
						60						
	-120	-42	-48	-1	-37	-52	-40	-18	-20	-25	-17	-43
L	14 L	12 L	14 L	12 L	15 L	10 L	15 L	11 L	14 L	14 L	13 L	14 L
	-6	4	0.5	1	-1	1	-4	5	-1	-0.5	-0.5	-1
	-	11.0	8.5	9.9	8.5	10.0	9.2	11.8	12.0	8.7	16.0	12.0
	-	-	-	11.6	-	-	-	-	-	-	-	-
	-	11.5	-	10.2	8.6	10.5	10.4	10.9	13.5	9.6	16.4	-
	-	-	-	10.3	9.4	-	-	-	-	-	15.6	13.0
	-/-	-/-	-/-	12.5/-	-/-	-/-	-/-	13.0/-	14.5/-	11.7/-	18.2/-	-/-
	-/-	-/-	-/-	12.5/-	-/-	-/-	-/-	13.0/-	14.5/-	11.7/-	18.2/-	-/-
					9.4				12.0	10.1	16.9	13.9
	137	135	133	132	133	135	135	136	134	135	137	135
	-	-	131.6	133.0	132.0	-	132.9	-	132.9	133.2	-	133.3
1.0	137.2/131.2	132.1/132.3	132.1/132.8	133.5/134.3	135.7/134.3	136.4/127.2	134.3/133.5	134.3/135.7	131.4/132.1	134.3/135.7	136.4/136.4	136.4/138.7
					133.4				133.8	134.4	136.3	134.4
					RUNWAY SLOPE: 0.4° (LONG) 0.1° R (LAT)				RUNWAY SLOPE: 0.4° (LONG) 0.4° R (LAT)	RUNWAY SLOPE: 0.4° (LONG) 0.2° R (LAT)	RUNWAY SLOPE: 0.3° (LONG) 0.4° R (LAT) LEFT WHEEL HIT HUMP 7 FEET AFTER TOUCHDOWN	RUNWAY SLOPE: 0.1° (LONG) 0° (LAT)

ed laterally as ℄ of runway and
ally as a line 100 Ft down runway
ence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25 [illegible]

PREPARED BY
CHECKED BY
DATE
TITLE LAN

Landing Number		154	155	156	157	158	159	160	161	162
Date		10-22-60	→	→	10-25-61	→	→	→	10-26-61	
Satisfactory			YES							
Condition Letter			K							
Configuration		INSTR STORE ON ℄ RACK 2-150 GALLON TANKS (FULL) ON WING			INSTR STORE ON ℄ RACK 2-150 GALLON TANKS (EMPTY) ON WING				←	
Fuel Remaining ① (LBS)		1450	1280	1040	2750	2570	2210	1980	2990	2840
Gross Weight (LBS)		14365	14195	13955	13655	13475	13115	12885	13615	13365
Runway Surface		CONCRETE	→	→	CONCRETE					
Mirror Angle (DEG)		4 1/4	4 1/4	4 1/4	3 1/2					
Wind (KTS)/Dir. (DEG)		0	→	→	8-12 / 21-	→	→	→	0	
Ambient Temp °F		60	→	→	59	→	→	→	62	→
Left Wheel T.D. Rel. to Zero ② (FT)	Long.	9	-19	-3	-53	-54	-46	-38	64	–
	Lat.	10 L	11 L	13 L	14 L	11 L	10 L	10 L	18 L	–
+INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		1	1.5	2	-9	-10	-9	-4	-12	–
Sink Speed FT/SEC ③	TRODI #1	14.5	14.5	10.9	7.3	9.2	10.0	9.7	–	12.0
	TRODI #2	17.0	16.1	12.2	–	–	–	–	–	14.0
	TRODI #3	16.0	14.5	11.0	–	–	–	–	8.3	–
	TRODI #4	15.5	14.0	10.5	–	–	–	–	8.2	11.5
	Mitchell Left Wheel	16.9 / –	17.0 / –	12.1 / –	NO MITCHELL DATA					
	Mitchell Right Wheel	16.9 / –	17.0 / –	12.1 / –	NO MITCHELL DATA					
	Photoscope Left Wheel		14.8							
Horiz. Speed KTS	SPN-12	131	133	133	115	118	115	119	–	125.0
	SODI	129.4	131.1	131.1	110.9	113.3	112.9	111.3	121.6	122.8
	Mitchell	130.1 / 130.1	134.3 / 132.8	131.4 / 130.8	NO MITCHELL DATA					
	Photoscope		133.5							
Remarks			RUNWAY SLOPE: 0.3° (LONG) 0.1°R (LAT)		NEW RIGHT MAIN TIRE " NOSE "					

Notes:

① Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

② Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

8	159	160	161	162	163	164	165	166	167	168	169	170
→	→	→	10-26-61 →									→
									YES	YES		YES
									N	N		N
ON ℄ RACK / ANICS (EMPTY) ON WING			← INSTRUMENTATION STORE ON ℄ RACK →									
)	2210	1980	2990	2840	2660	2470	2260	2160	3050	2910	2750	2570
5	13115	12885	13615	13365	13285	13095	12885	12785	13675	13535	13375	13195
												→
												→
		→	0									→
		→	62 →						54 →			→
	-46	-38	64	-	4	63	46	-10	6	13	-80	39
L	10 L	10 L	18 L	-	20 L	19 L	18 L	22 L	19 L	16 L	13 L	13 L
	-9	-4	-12	-	-4	-11	-4	-14	-10	-15	-10	-20
	10.0	9.7	-	12.0	12.5	-	12.0	11.5	12.5	9.7	-	12.5
	-	-	-	14.0	14.5	-	14.0	-	14.0	11.5	-	14.8
	-	-	8.3	-	12.0	10.0	11.0	-	12.5	9.5	-	11.0
	-	-	8.2	11.5	11.5	10.0	11.0	10.8	11.8	9.6	-	11.6
							14.7 -	- -	- -	- -	- -	- -
NO MITCHELL DATA							14.7 -	- -	- -	- -	- -	- -
									12.7	10.0		12.4
	115	119	-	125.0	-	124	-	-	-	124.0	120.0	131.0
?	112.9	111.3	121.6	122.8	125.0	124.4	121.0	122.8	122.6	123.3	117.5	129.7
NO MITCHELL DATA →							119.8 -	123.7 123.1	102.8 105.0	- -	- -	- -
									123.7	124.0		130.5
									RUNWAY SLOPE: 0.3° (LONG) 0.1°R (LAT)	RUNWAY SLOPE: 0.3° (LONG) 0.4°R (LAT)		RUNWAY SLOPE: 0.5° (LONG) 0.3°R (LAT)

ed laterally as ℄ of runway and
ally as a line 100 ft down runway
ence point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25 ... REV ...

PREPARED BY
CHECKED BY
DATE: ____
TITLE ____ LAN

Landing Number		171	172	173	174	175	176	177	178	179
Date		10-26-66	—							
Satisfactory		YES								YES
Condition Letter		N								M
Configuration		—				INSTRUMENTATION				STO
Fuel Remaining ① (LBS)		2360	2160	2990	2870	2660	2470	2260	2160	3150
Gross Weight (LBS)		12985	12785	13615	13495	13285	13095	12885	12785	13775
Runway Surface		CONCRETE	—							
Mirror Angle (DEG)		3 1/2	3 1/2	4 1/2	4 1/2	4 1/2	4 3/4	—		
Wind (KTS)/Dir. (DEG)		0 /	0 /	4-5 / 135	/	/	/	/	/	4-5 / 90
Ambient Temp °F		54	55	65	—					
Left Wheel T.D. Rel. to Zero ② (FT)	Long.	6	10	-	-	-	-	-	-	-
	Lat.	15 L	17 L	4 L	4 L	1 L	6 L	6 L	4 L	1 L
+INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		-16	-13	0	-0.5	1	-7	-7	0	8
③ Sink Speed FT/SEC	TRODI #1	12.0	10.0	-	-	-	-	-	-	-
	TRODI #2	14.0	12.0	10.8	14.6	10.0	12.0	12.3	13.4	14.9
	TRODI #3	11.7	10.7	11.0	12.5	9.6	11.2	10.4	-	14.0
	TRODI #4	11.3	9.5	11.0	13.0	9.3	10.6	9.9	13.4	13.8
	Mitchell Left Wheel	- / -	- / -	- / -	14.4 / 16.3	13.7 / 12.3	- / -	15.1 / 13.6	- / -	18.5 / 17.9
	Mitchell Right Wheel	- / -	- / -	- / -	14.4 / 16.3	13.7 / 12.3	- / -	15.1 / 13.6	- / -	18.5 / 17.9
	Photoscope Left Wheel	11.7								
Horiz. Speed KTS	SPN-12	129.0	127.5	128.0	125.0	126.0	127.0	125.0	124.0	130.0
	SODI	127.9	126.0	124.9	—	124.4	124.4	124.8	122.3	127.5
	Mitchell	- / -	- / -	124.3 / -	118.6 / 120.7	123.3 / 123.1	- / -	124.9 / 125.5	123.1 / 122.5	128.8 / 128.1
	Photoscope	128.7								
Remarks		RUNWAY SLOPE: 0.3° (LONG) 0.3°R (LAT)		NEW LEFT MAIN TIRE; CABLE LANDINGS - DISTANCE; -56	-33	-17.5	-37	-8	- INDICATES T...; -58	-25.5
				OSC #2 INOP	OSC #2 INOP	OSC #2 INOP	OSC #2 INOP	OSC #2 INOP	OSC #2 INOP	

181

Notes:

① Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

② Zero defined laterally as ℄ of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data).

③

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE:
TITLE LANDING LOADS INVESTIGATION

TESTING DIVISION

PAGE 8.6.11
MODEL A4D-2 #089
REPORT NO DEV-3616

	176	177	178	179	180	181	182	183	184	185	186	187
	→									→	10-27-60	10-27-60
				YES								
				M								
	INSTRUMENTATION STORE ON ℄ RACK →											→
0	2470	2260	2160	3150	3050	2910	2750	2570	2410	2160	3050	2910
5	13095	12885	12785	13775	13675	13535	13375	13195	13035	12785	13675	13535
	→											→
	4 3/4 →									→	4 1/2	4 1/2
	→		→	4-5 / 90						→	5-7 / 90	5-7 / 90
	→									→	58	58
	-	-	-	-	-	-	-	-	-	-	-	-
	6L	6L	4L	1L	8L	4L	2L	2L	3L	3L	3L	5L
	-7	-7	0	8	3	-3	-1	3	-	-10	-2	3
	-	-	-	-	-	-	-	-	-	-	12.0	11.9
	12.0	12.3	13.4	14.9	14.8	14.5	14.4	15.0	17.2	15.9	-	-
	11.2	10.4	-	14.0	-	13.5	14.0	15.0	-	16.0	-	-
	10.6	9.9	13.4	13.8	-	13.8	14.0	14.5	-	15.0	-	-
	- / -	15.1 / 13.6	- / -	18.5 / 17.9	- / -	- / -	- / -	- / -	- / -	19.7 / 19.0	12.8 / -	13.6 / 15.0
3	- / -	15.1 / 13.6	- / -	18.5 / 17.9	- / -	- / -	- / -	- / -	- / -	19.7 / 19.0	12.8 / -	13.6 / 15.0
	127.0	125.0	124.0	130.0	125.0	126.0	125.0	124.0	124.0	126.0	-	-
	124.4	124.8	122.3	127.5	122.5	123.8	124.0	122.4	123.2	124.0	-	-
	- / -	124.9 / 125.5	123.1 / 122.5	128.8 / 128.1	121.9 / 123.7	124.9 / 125.5	122.5 / 125.5	123.7 / 122.5	125.5 / 124.3	123.7 / 123.7	122.5 / 121.3	123.7 / 123.1
	CABLE LANDINGS - DISTANCE FROM TOUCHDOWN PT TO CABLE →											→
			— INDICATES T.D. PRIOR TO WIRE									
	-37	-8	-58	-25.5	-74	-58	-55	-56	-86	-45	-67	-60
	OSC #2 INOP →		→									
										NO INSTRUMENTATION	NEW RIGHT MAIN TIRE	

l laterally as ℄ of runway and
ly as a line 100 Ft down runway
ce point of photoscope (see survey

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft } Port Wheel
#3 Port Fwd } Starboard Wheel
#4 " Aft } Starboard Wheel

2

FORM 28 S-9
(REV 8-5?)

PREPARED BY
CHECKED BY
DATE
TITLE LANDIN

Landing Number	188	189	190	191	192	193	194	195	196	1
Date	10-27-60	10-27-61	10-27-60	11-1-60	———	———	———	———	———	———
Satisfactory	YES		YES							
Condition Letter	M		M							
Configuration	← INSTRUMENTATION STOR									
Fuel Remaining (1) (LBS)	2660	2360	2160	2360	2260	2160	2070	3120	2990	2
Gross Weight (LBS)	13285	12985	12785	12985	12885	12785	12695	13745	13615	13
Runway Surface	CONCRETE ———									
Mirror Angle (DEG)	4 1/2 ———						→	4 3/4 ———		
Wind (KTS)/Dir. (DEG)	5-7 / 90	5-7 / 90	5-7 / 90	5-10 / 270	5-10 / 270	5-10 / 270	5-10 / 270	0		
Ambient Temp °F	58	58	58	70	70	70	70	68 ———		
Left Wheel T.D. Rel. to Zero (2) (FT) — Long.	-46	-40	-46	-1	-92	-17	-15	-90	-63	-1
Left Wheel T.D. Rel. to Zero (2) (FT) — Lat.	4 L	6 L	6 L	5 L	4 L	7 L	5 L	3 L	6 L	
+ INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.	0	-2	-1	3	1	-0.5	0	0	2	
Sink Speed (3) FT/SEC — TRODI #1	134	12.9	14.8	-	14.0	15.0	15.0	16.0	16.0	15
TRODI #2	-	13.9	16.5	-	-	15.5	15.5	-	-	-
TRODI #3	-	-	-	-	-	-	-	-	-	-
TRODI #4	-	-	-	14.5	-	154	14.0	-	-	-
Mitchell Left Wheel	14.9 / 16.6	14.8 / 154	151 / 17.6	16.3 / 15.7	- / -	17.3 / 18.3	17.1 / 17.7	- / -	- / -	18.
Mitchell Right Wheel	149 / 16.6	148 / 15.4	15.1 / 17.6	16.3 / 15.7	- / -	17.3 / 18.3	17.1 / 17.7	- / -	- / -	18
Photoscope Left Wheel										
Horiz. Speed KTS — SPN-12	-	-	-	-	-	-	-	-	-	-
SODI	-	-	-	-	-	-	-	-	-	-
Mitchell	126.8 / 126.2	127.4 / 127.4	128.8 / 124.4	121.3 / 119.6	120.7 / 121.9	124.9 / 127.4	137.3 / 130.1	126.7 / 127.4	130.7 / 127.4	129
Photoscope										
Remarks				← BALANCE PANEL #4						

Notes:

(1) Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

(2) Zero defined laterally as ℄ of runway and longitudinally ~~as a line 100 Ft down runway from reference point of photoscope (see survey data).~~ AS THE CABLE (- INDICATES T.D. PRIOR TO CABLE).

(3) L

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE:
TITLE LANDING LOADS INVESTIGATION

TESTING DIVISION

PAGE 8.6.12
MODEL A4D-2 #089
REPORT NO DEV-3616

2	193	194	195	196	197	198	199	200	201	202	203	204
	→											→
	INSTRUMENTATION STORE ON ℄ RACK →											
0	2160	2070	3120	2990	2830	2660	2470	2260	2160	3200	3050	2910
35	12785	12695	13745	13615	13455	13285	13095	12885	12785	13825	13675	13535
	→											→
→	→	→	4 3/4 →									→
0	5-13/270	5-13/270	0	/	/	/	/	/	/	/	/	/
	70	70	68 →						→	65	65	65
-	-17	-15	-90	-63	-19	-27	-32	-33	-52	-51	-65	-13
L	7 L	5 L	3 L	6 L	5 L	3 L	2 L	3 L	3 L	5 L	5 L	3 L
	-0.5	0	0	2	0	0	5	3	0	4	1	4
	15.0	15.0	16.0	16.0	15.5	15.0	16.5	14.2	-	17.5	17.0	16.5
	15.5	15.5	-	-	-	-	-	-	-	18.0	-	17.0
	-	-	-	-	-	-	-	-	-	-	-	-
	15.4	14.0	-	-	-	-	-	-	-	-	-	-
-	17.3/18.3	17.1/17.7	- / -	- / -	18.9/19.1	16.8/18.2	18.4/19.0	16.7/17.7	- / -	18.7/21.1	- / -	18.7/18.7
-	17.3/18.3	17.1/17.7	- / -	- / -	18.9/19.1	16.8/18.2	18.4/19.0	16.7/17.7	- / -	18.7/21.1	- / -	18.7/18.7
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
.9	124.9/127.4	137.3/130.1	126.7/127.4	130.7/121.4	129.4/130.8	126.7/124.9	132.1/131.4	129.4/129.4	126.2/126.8	135.7/135.0	132.3/-	138.7/138.7
	BALANCE PANEL #4 INOPERATIVE →											

ed laterally as ℄ of runway and
ally ~~as a line 100 ft. down runway~~
~~ence point of photoscope (see survey~~
THE CABLE (- INDICATES T.O.
CABLE)

③ Location of TRODI
TRODI #1 Starboard Fwd } Port Wheel
#2 " Aft
#3 Port Fwd } Starboard Wheel
#4 " Aft

2

FORM 25-4 9
(REV. 8-57)

PREPARED BY
CHECKED BY
DATE
TITLE LANDING

		205	206	207	208	209					
Landing Number		205	206	207	208	209					
Date		11-1-60									
Satisfactory											
Condition Letter											
Configuration		INSTRUMENTATION STORE ON ℄									
Fuel Remaining ① (LBS)		2750	2570	2360	2160	2070					
Gross Weight (LBS)		13375	13195	12985	12785	12695					
Runway Surface		CONCRETE									
Mirror Angle (DEG)		4 3/4									
Wind (KTS)/Dir. (DEG)		0									
Ambient Temp °F		65									
Left Wheel T.D. Rel. to Zero ② (FT)	Long.	-48	-45	-32	-61	-46					
	Lat.	7 L	6 L	6 L	5 L	4 L					
+ INDICATES LEFT FIRST Rt. Wheel TD Rel to Lt.		1	2	2	-4	0					
Sink Speed FT/SEC ③	TRODI #1	14.0	15.7	16.2	16.5	15.8					
	TRODI #2	14.0	15.6	17.2	-	16.7					
	TRODI #3	-	-	-	-	-					
	TRODI #4	-	-	-	-	-					
	Mitchell Left Wheel	12.5 / 13.7	19.2 / 18.9	- / -	- / -	17.3 / 16.3					
	Mitchell Right Wheel	12.5 / 13.9	19.2 / 18.3	- / -	- / -	17.3 / 16.3					
	Photoscope Left Wheel										
Horiz. Speed KTS	SPN-12	-	-	-	-	-					
	SODI	-	-	-	-	-					
	Mitchell	131.4 / 137.8	137.9 / 134.3	- / -	130.8 / 132.8	137.2 / 133.5					
	Photoscope										
Remarks [redacted]		BALANCE PANEL #4 INOPERATIVE									

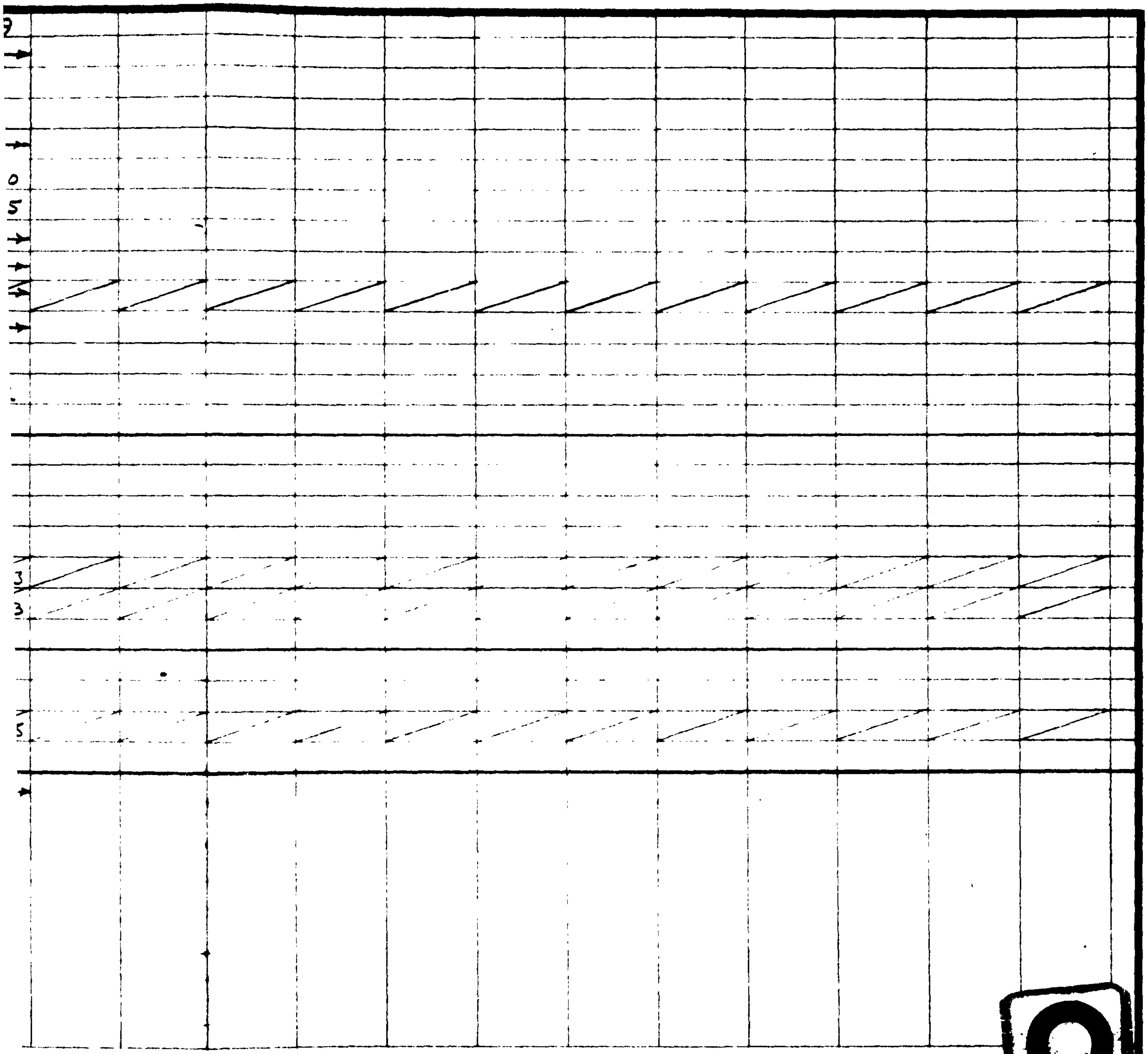
Notes:

① Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

② Zero defined laterally as ℄ of runway and longitudinally as ~~a line 100 ft down runway from reference point of photoscope (see survey data).~~ THE CABLE. (- INDICATES T.D. PRIOR TO CABLE).

③

EE1



i laterally as ℄ of runway and
lly as ~~a line 100 ft down runway~~
~~ree point of photoscope (see survey~~
E CABLE. (- INDICATES T.D.
CABLE).

③ Location of TRODI

TRODI #1	Starboard	Fwd	Port Wheel	
#2	"	Aft		
#3	Port	Fwd	Starboard Wheel	
#4	"	Aft		

2

FORM 25 RP (REV. 3-54) PREPARED BY: CHECKED BY: DATE: TITLE:

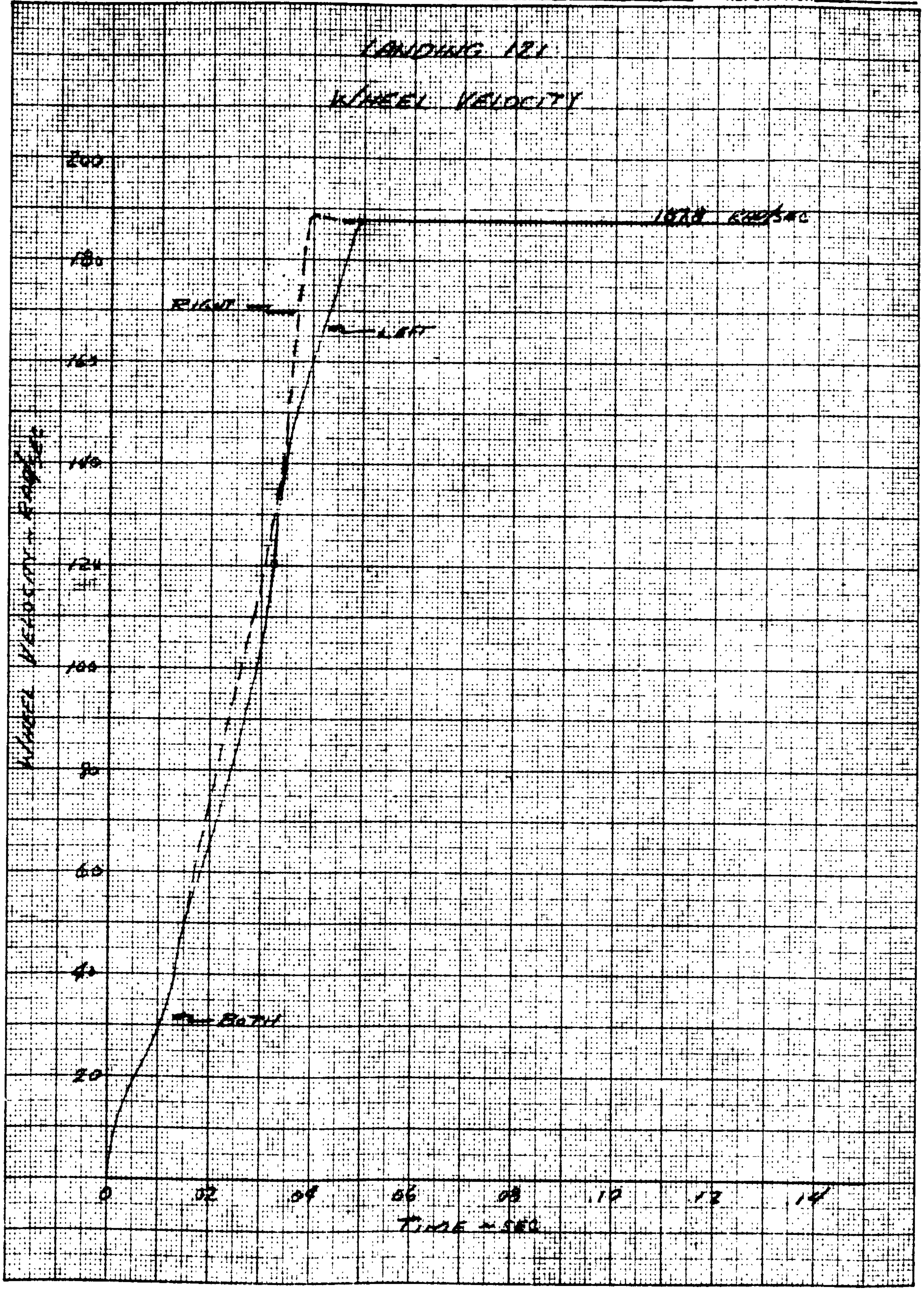
DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.71

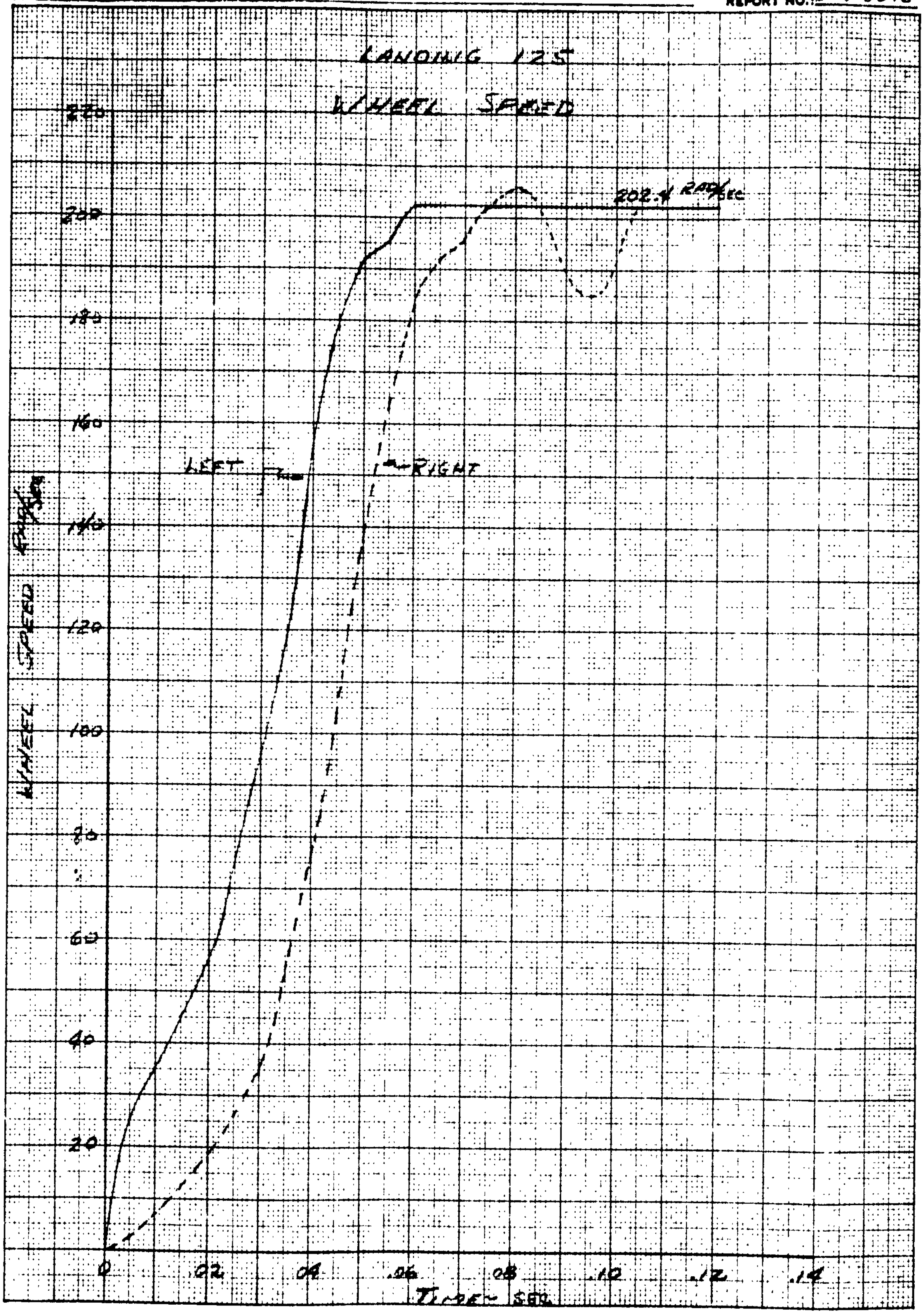
MODEL: A4D-2

REPORT NO.: DEV-3616



K·E ALBANENE TRACING PAPER

134


LANDING 125
WHEEL SPEED
202.4 RAD/SEC
LEFT
RIGHT
WHEEL SPEED RAD/SEC
220
200
180
160
140
120
100
80
60
40
20
0
.02
.04
.06
.08
.10
.12
.14
TIME ~ SEC

FORM 25 BP (REV. 3-54)

PREPARED BY:

CHECKED BY

DATE

TITLE

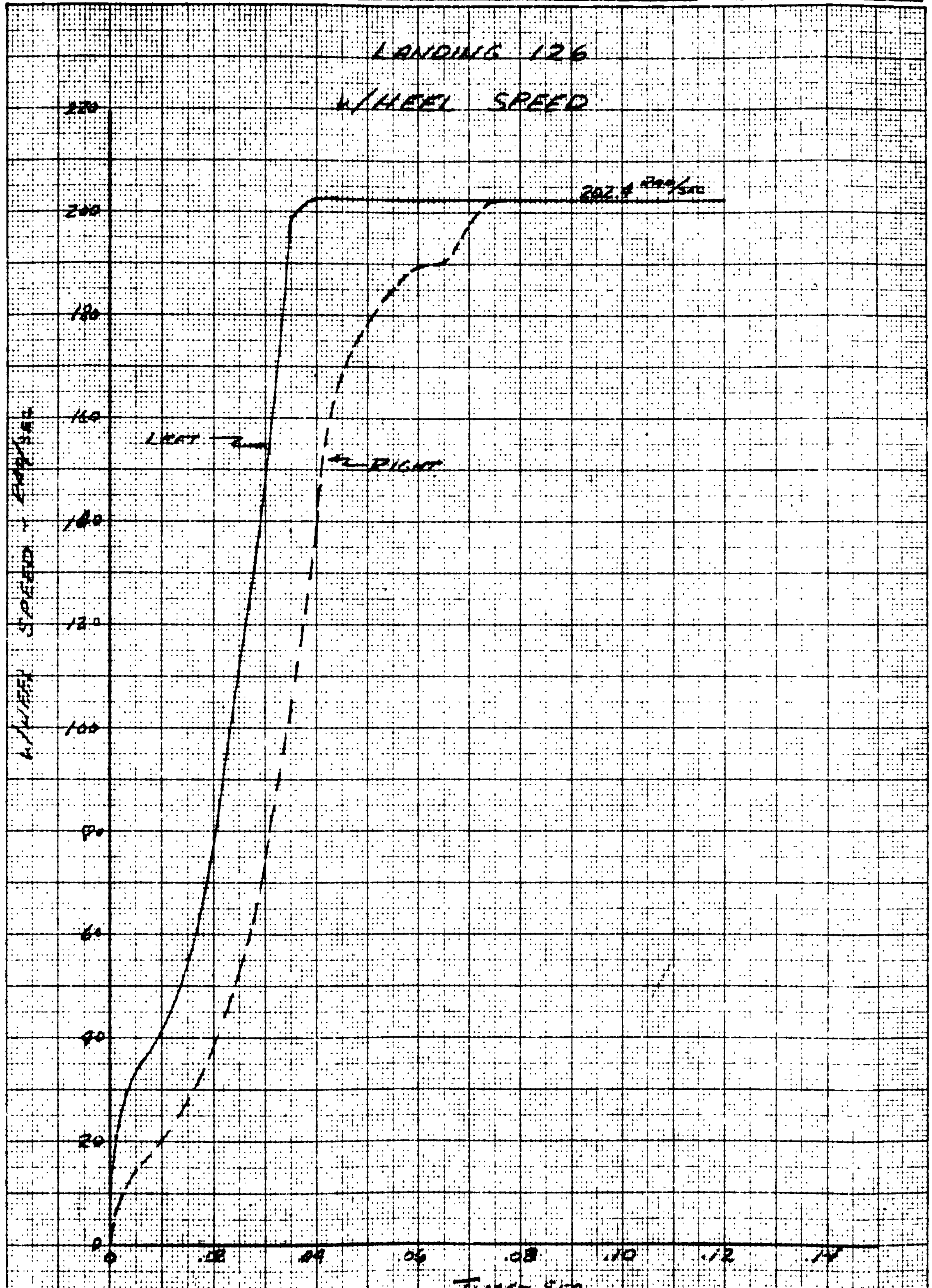
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.73

MODEL: A4D-2

REPORT NO.: DEV-3616



FORM 25 BP (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE

TITLE

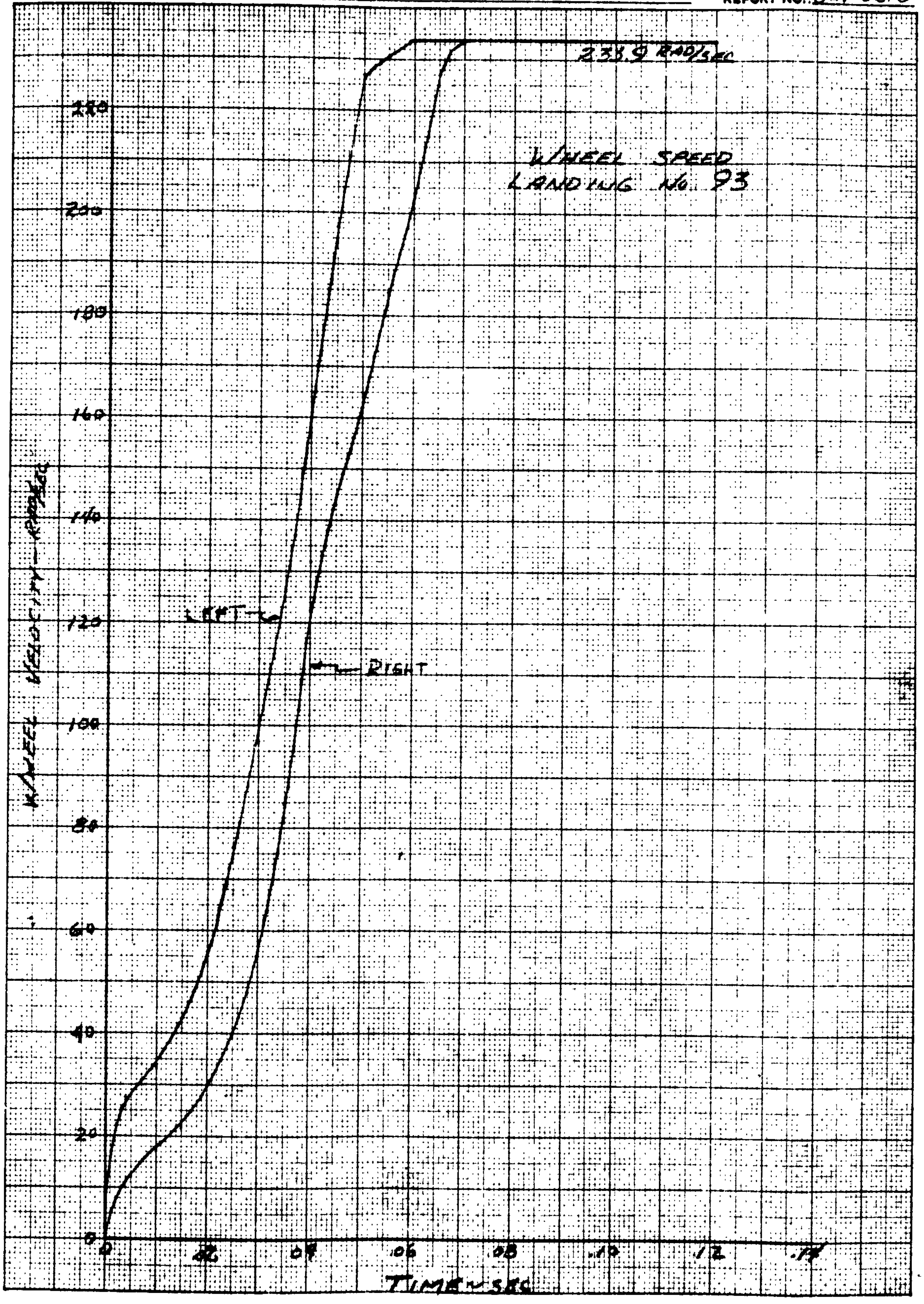
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.4

MODEL: A4D-2

REPORT NO.: DEV-3616



K+E ALBANENE TOOL TRACING PAPER

137

FORM 25 BP (REV 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

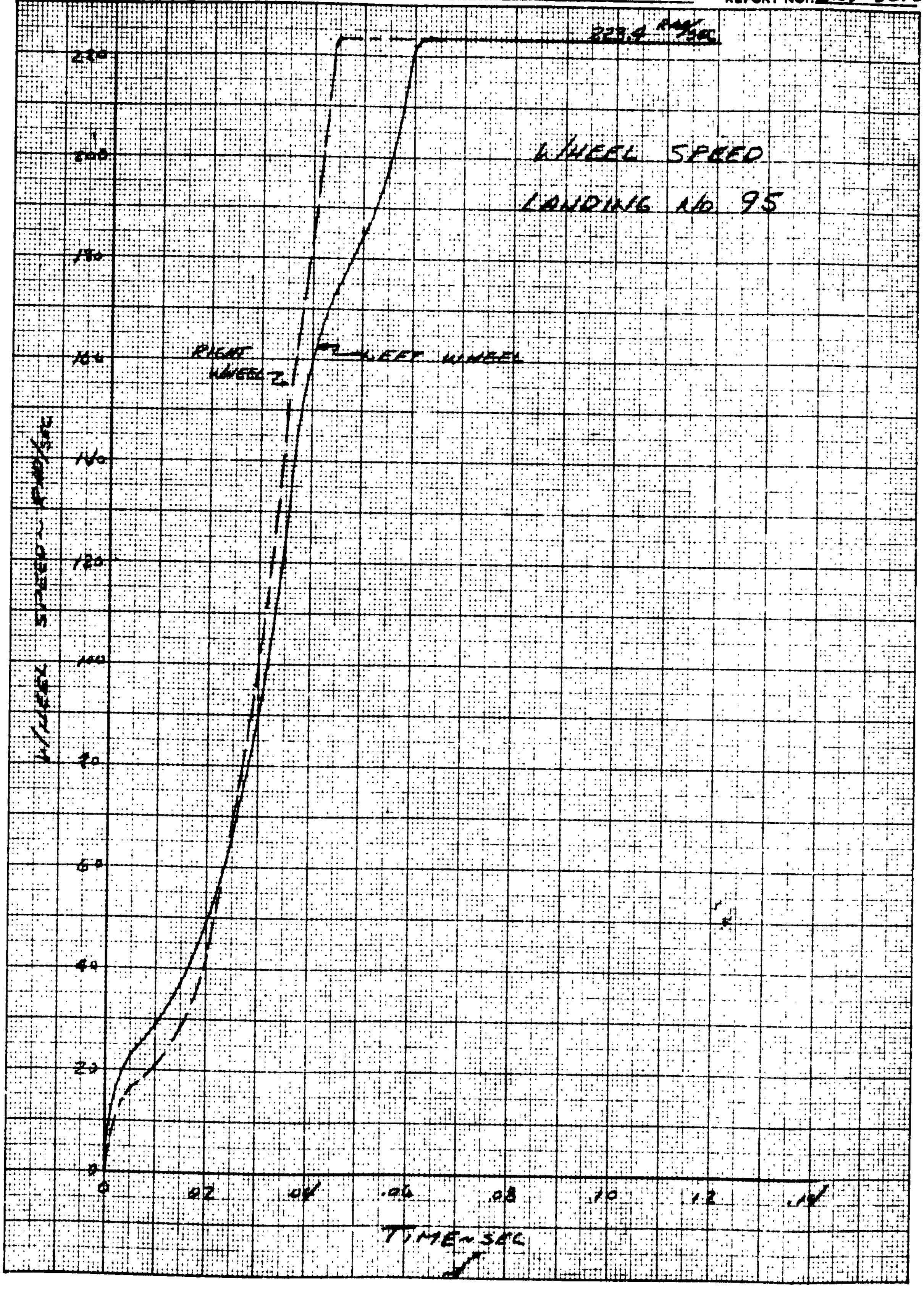
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.5

MODEL: A4D-2

REPORT NO.: DEV-3616



K+E ALBANENE 195L ® TRACING PAPER

FORM 25 BP (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE

TITLE

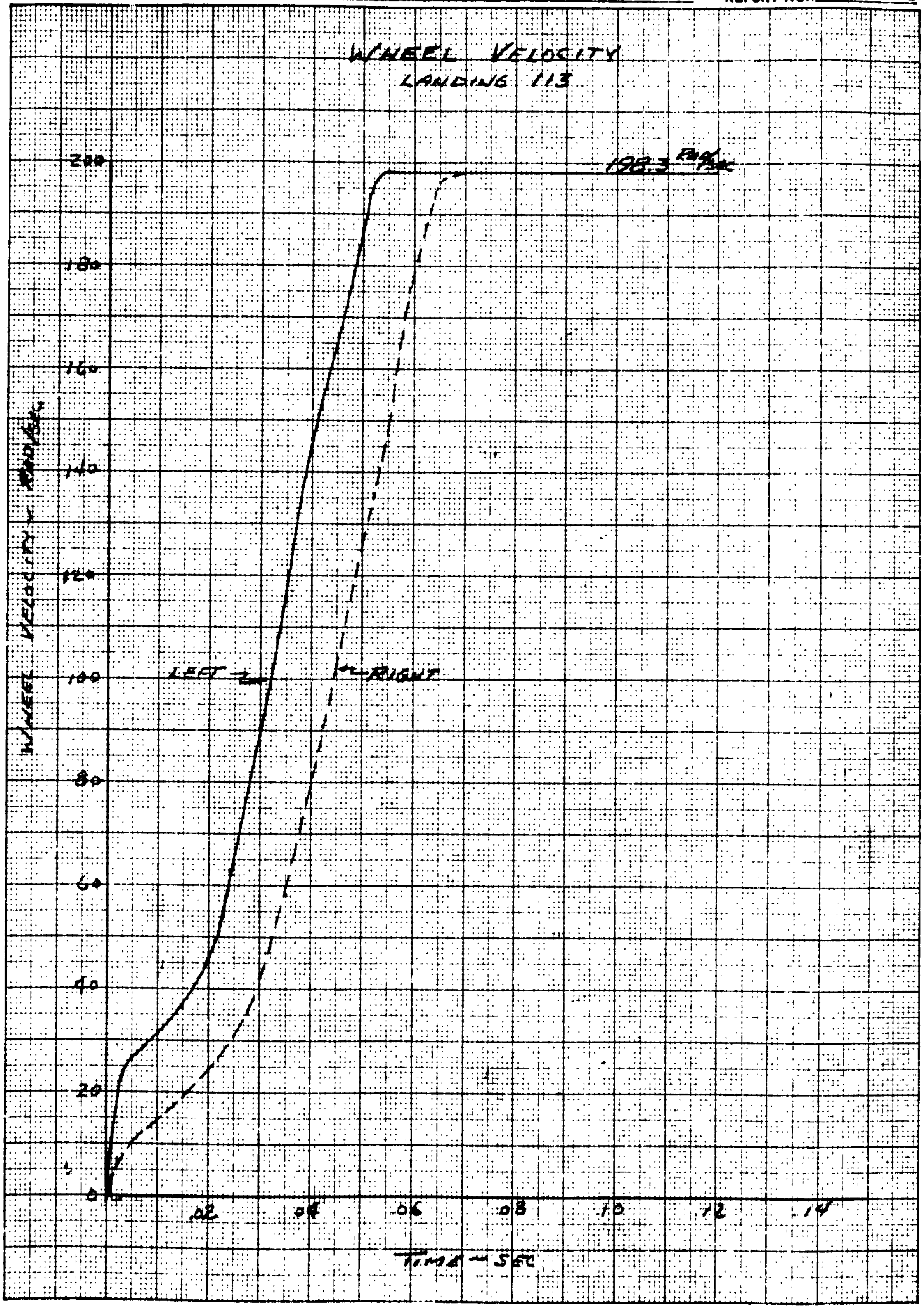
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.7.6

MODEL A4D-2

REPORT NO. DEV-3616



K+E ALBANENE 195L

137

FORM 25 OP (REV. 3-54) PREPARED BY

CHECKED BY:

DATE

TITLE

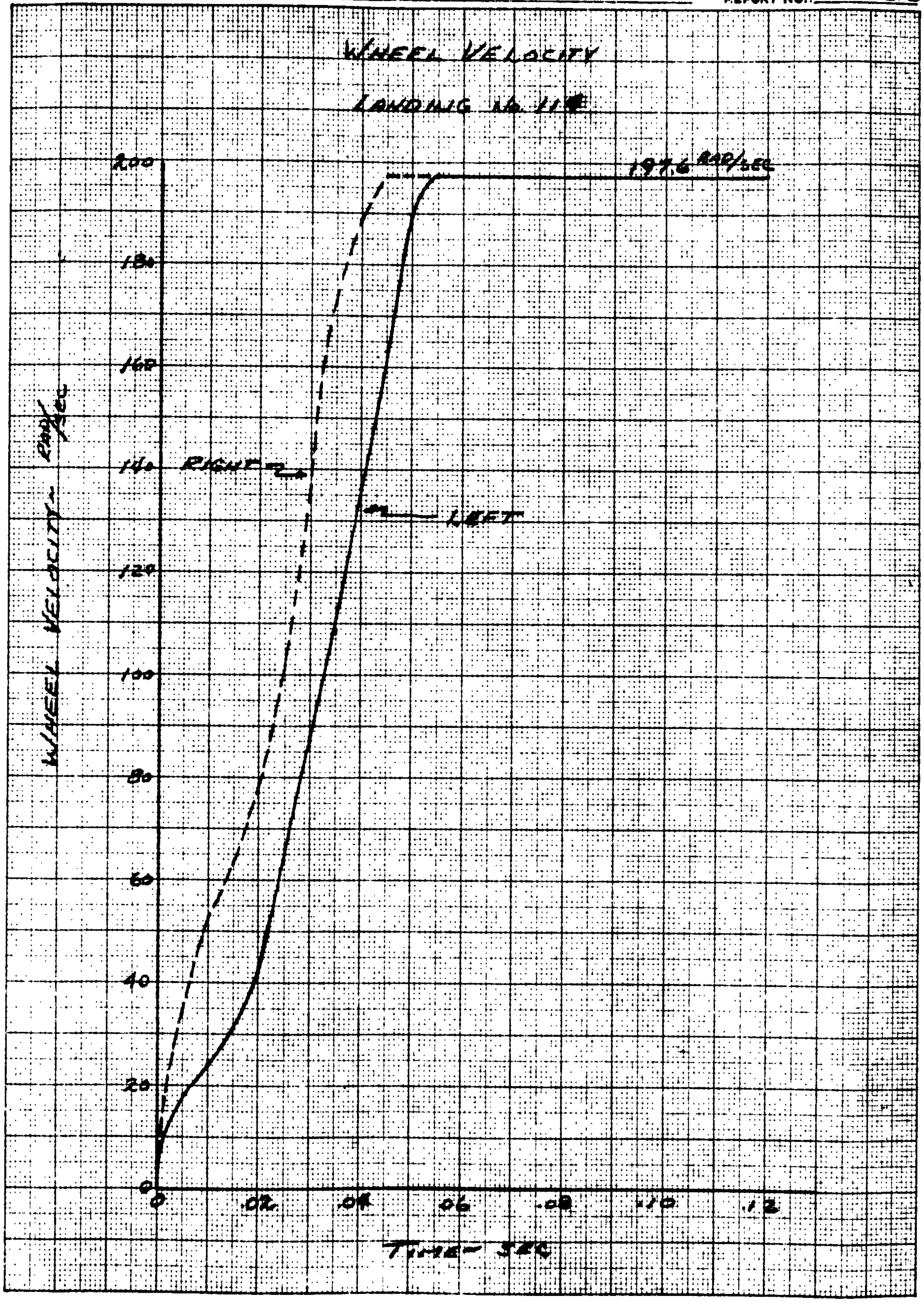
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.7

MODEL: A4D-2 #089

REPORT NO.: DEV-3616



K·E ALBANENE 1951 © TRACING PAPER

140

FORM 25 BP (REV. 1-54)

PREPARED BY:

CHECKED BY:

DATE

TITLE:

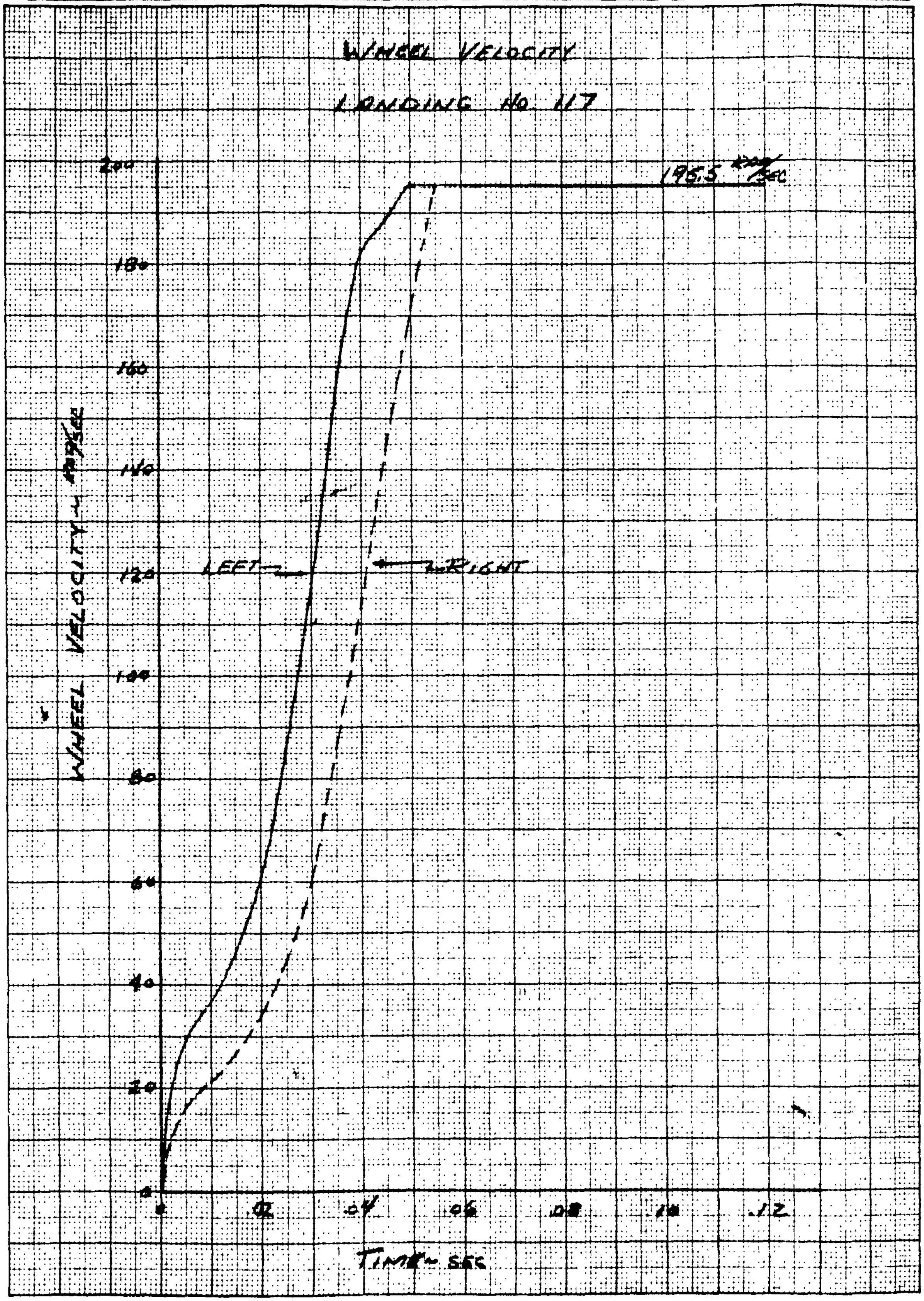
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.78

MODEL: A4D-2

REPORT NO. DEV-3616



K-E

121

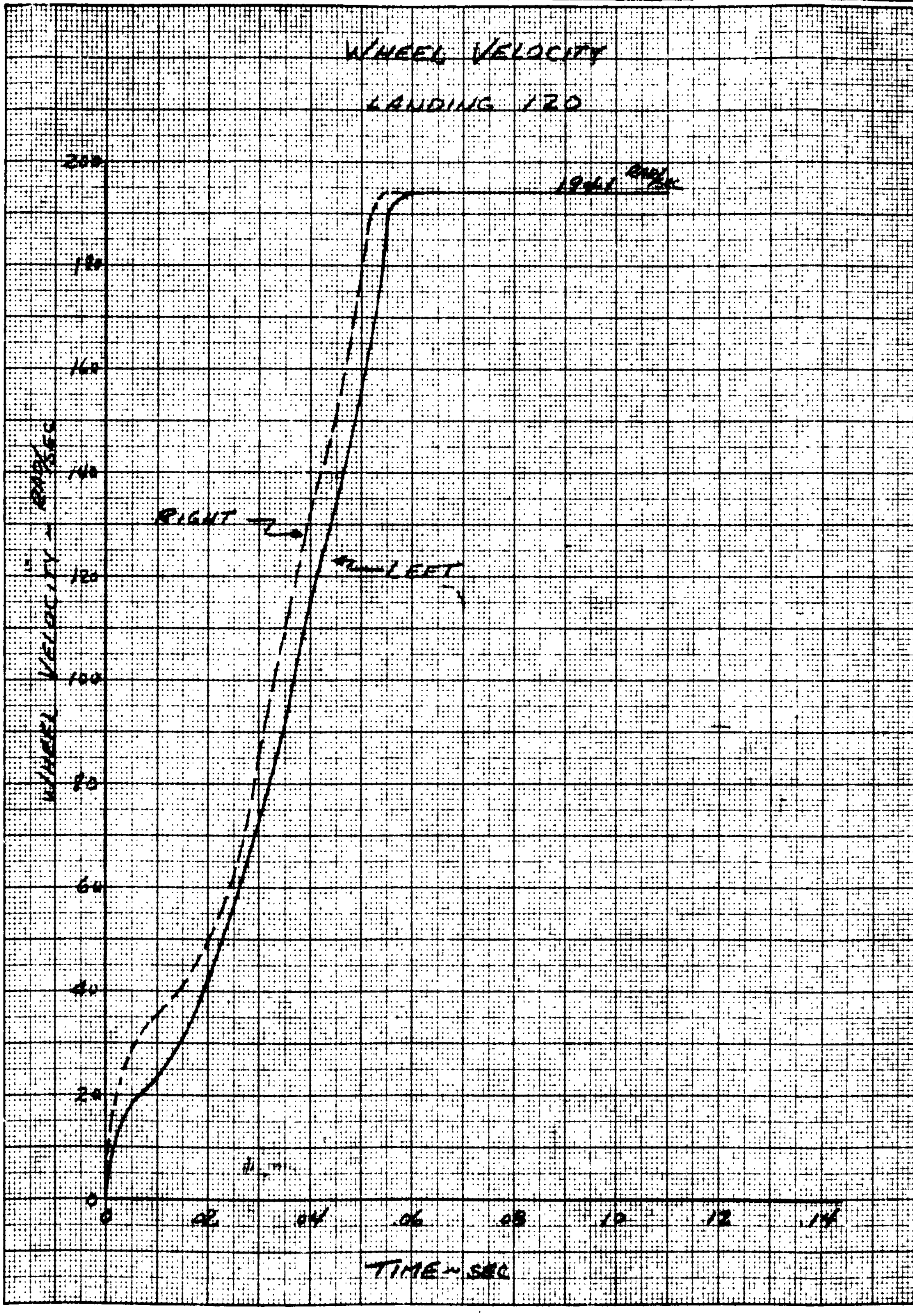
FORM 25 BP (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.79
MODEL: A4D-2
REPORT NO.: DEV-3616



K-E ALBANENE 195L

142

FORM 25 DP (REV. 1-54)

PREPARED BY:

CHECKED BY:

DATE

TITLE:

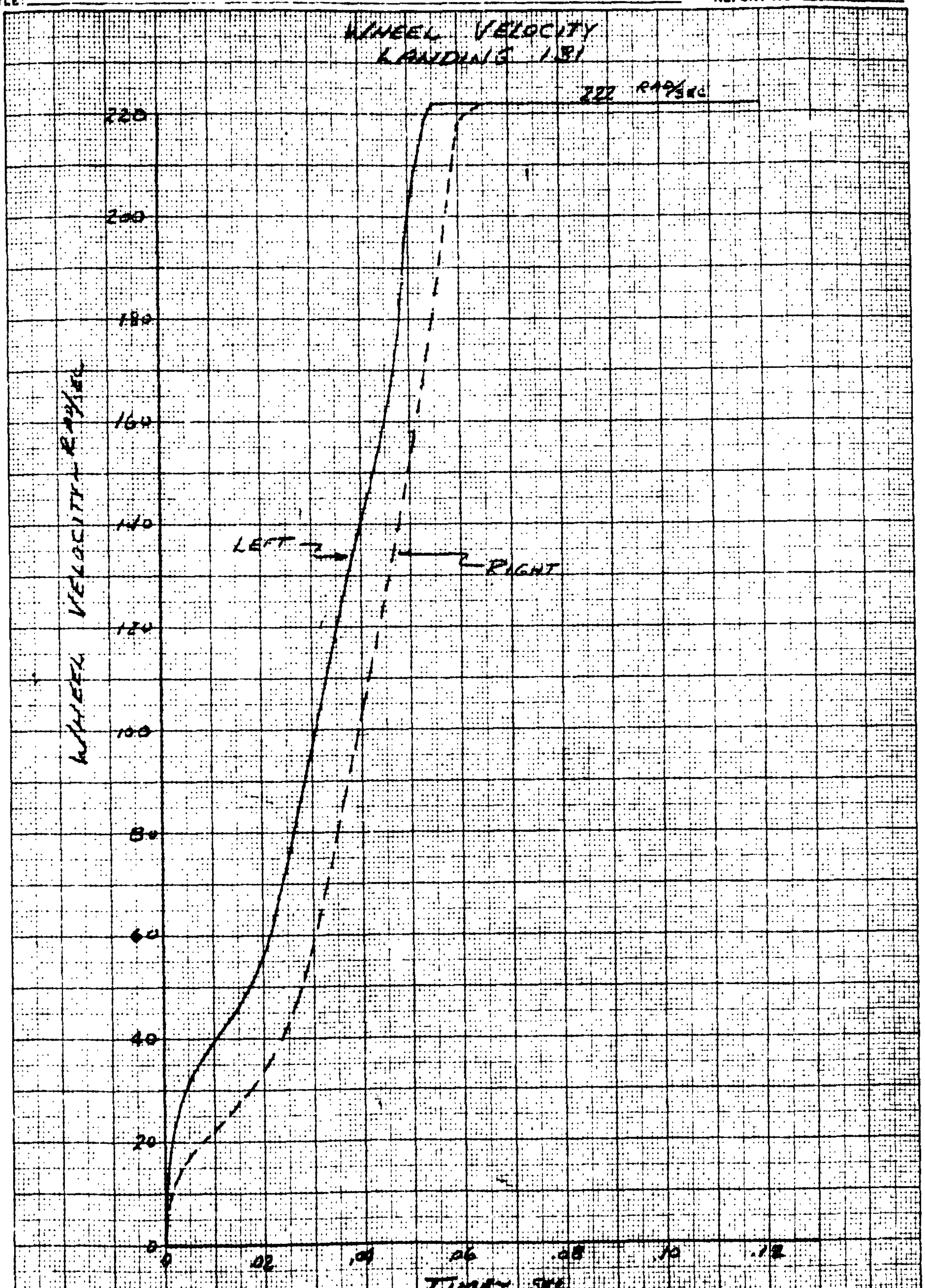
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.10

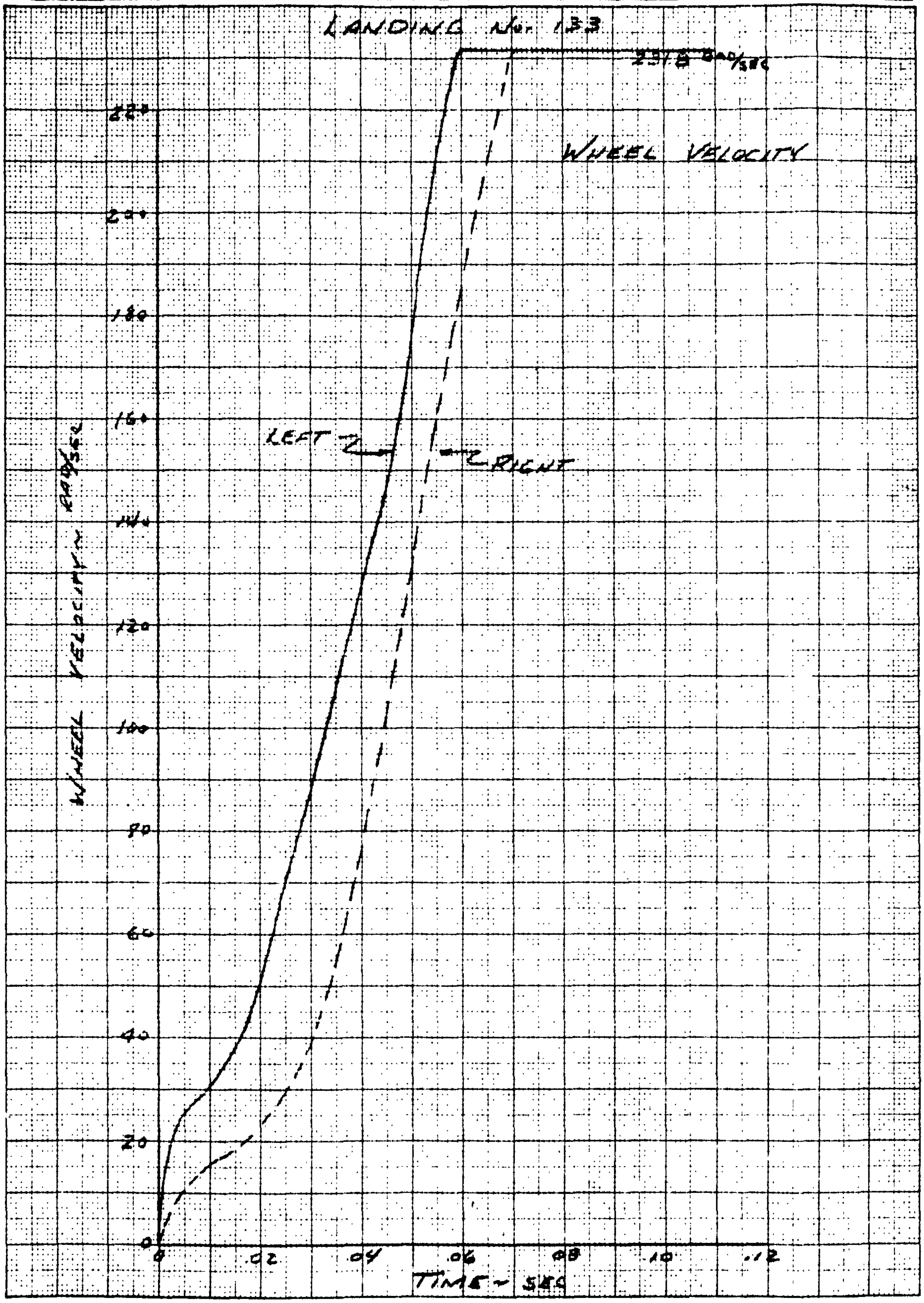
MODEL: A4D-2

REPORT NO.: DEV-3616



K+E ALBANENE 1956 TRACING PAPER

143


LANDING No. 133
251.8 RAD/SEC
WHEEL VELOCITY
LEFT
RIGHT
WHEEL VELOCITY ~ RAD/SEC
TIME ~ SEC
0
20
40
60
80
100
120
140
160
180
200
220
0
.02
.04
.06
.08
.10
.12

FORM 25 BP (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

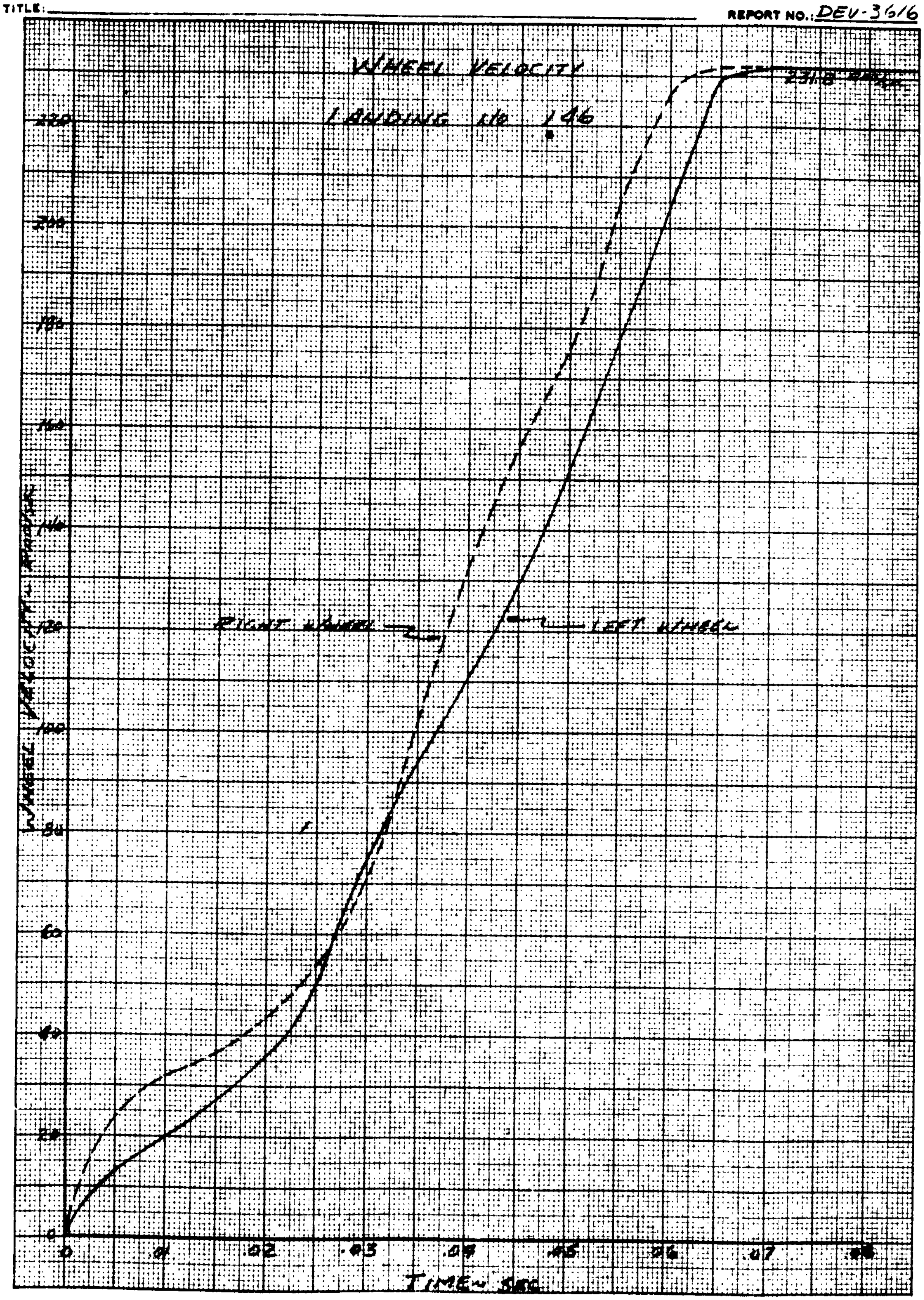
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.12

MODEL: A4D-2

REPORT NO.: DEV-3616



K+E ALBANENE 195L ® TRACING PAPER

FORM 25 BP (REV. 1-54)

PREPARED BY

CHECKED BY

DATE

TITLE

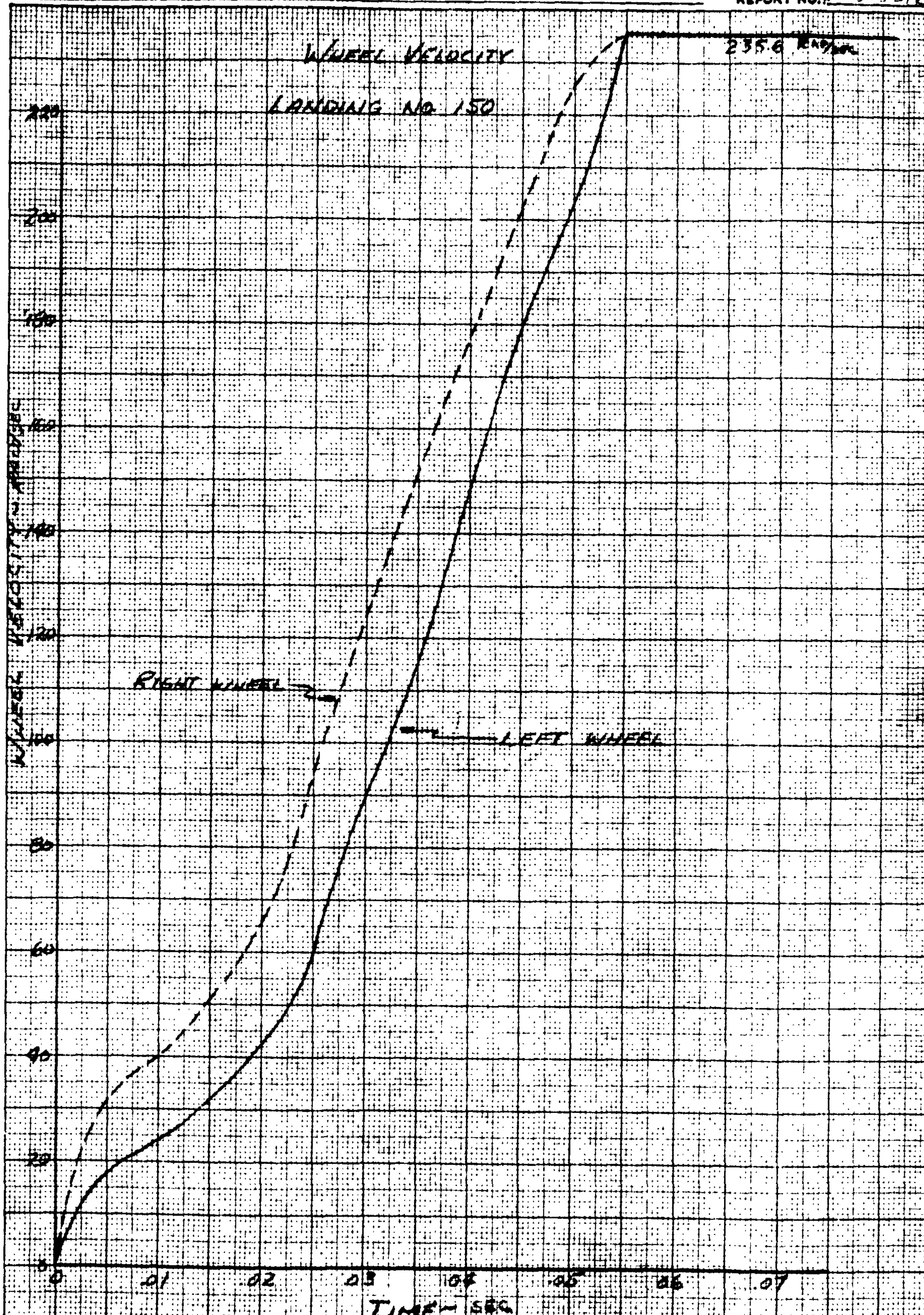
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.713

MODEL: A4D-2

REPORT NO. DEV 3616



K+E ALBANENE TRACING PAPER

146

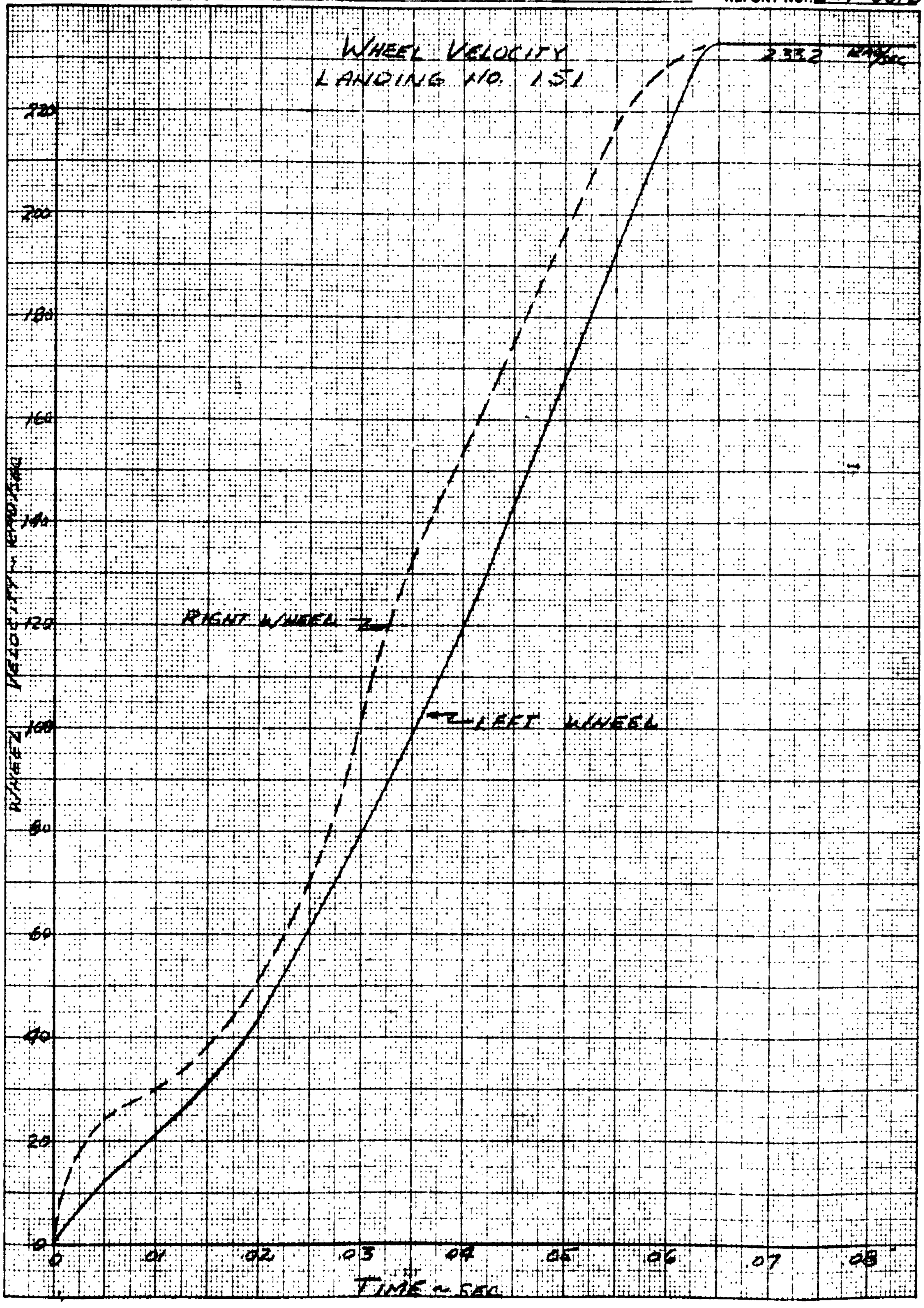
FORM 25 DP (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.14
MODEL: A4D-2
REPORT NO.: DEV-3616



K+E ALBANENE 195L® TRACING PAPER

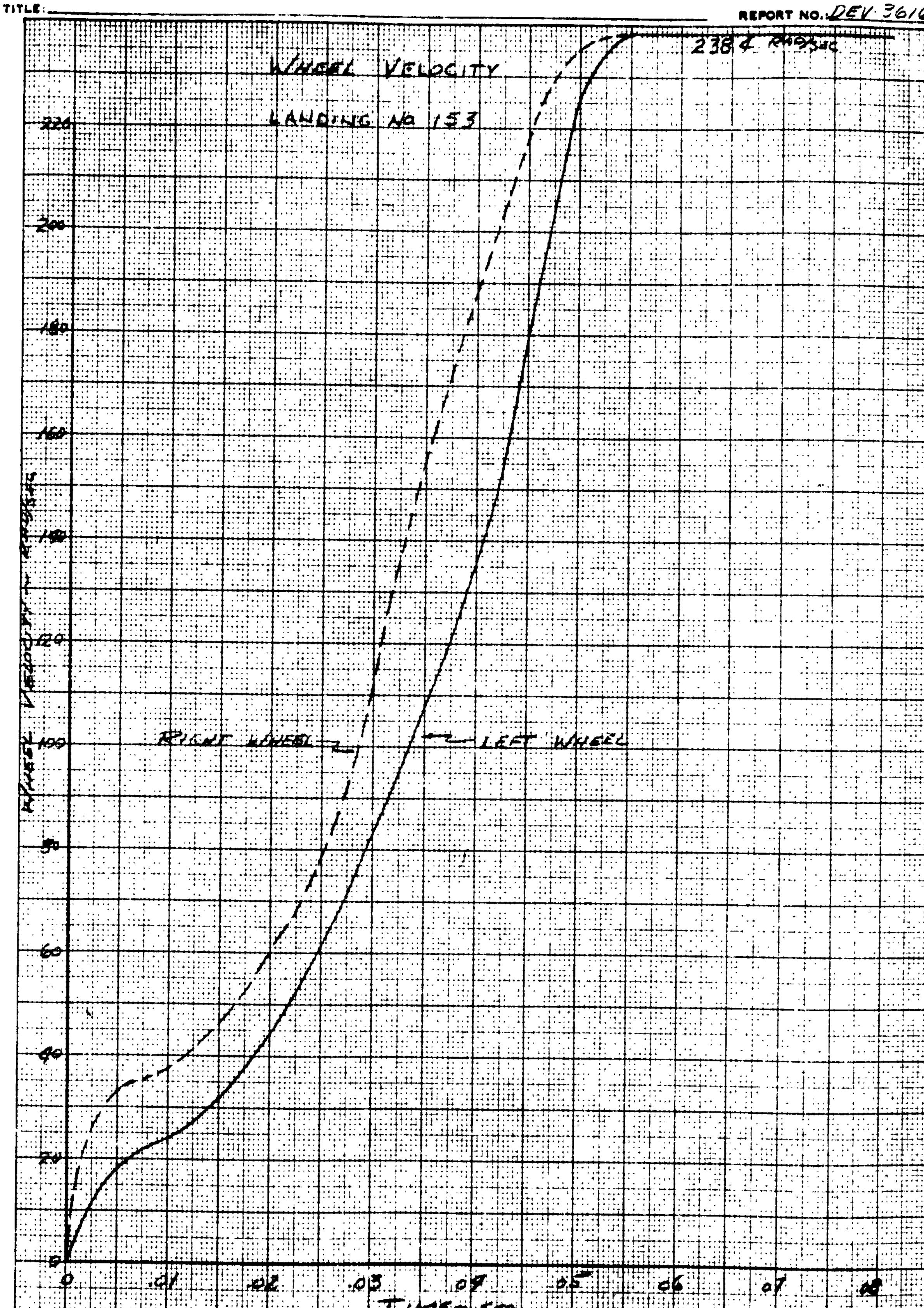
147

FORM 25 UP (REV. 3-54) PREPARED BY: CHECKED BY: DATE TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.15
MODEL: A4D-2
REPORT NO. DEV 3616



K+E ALBANENE 1081 TRACING PAPER

FORM 25 BP (REV. 3-54) PREPARED BY: CHECKED BY: DATE TITLE

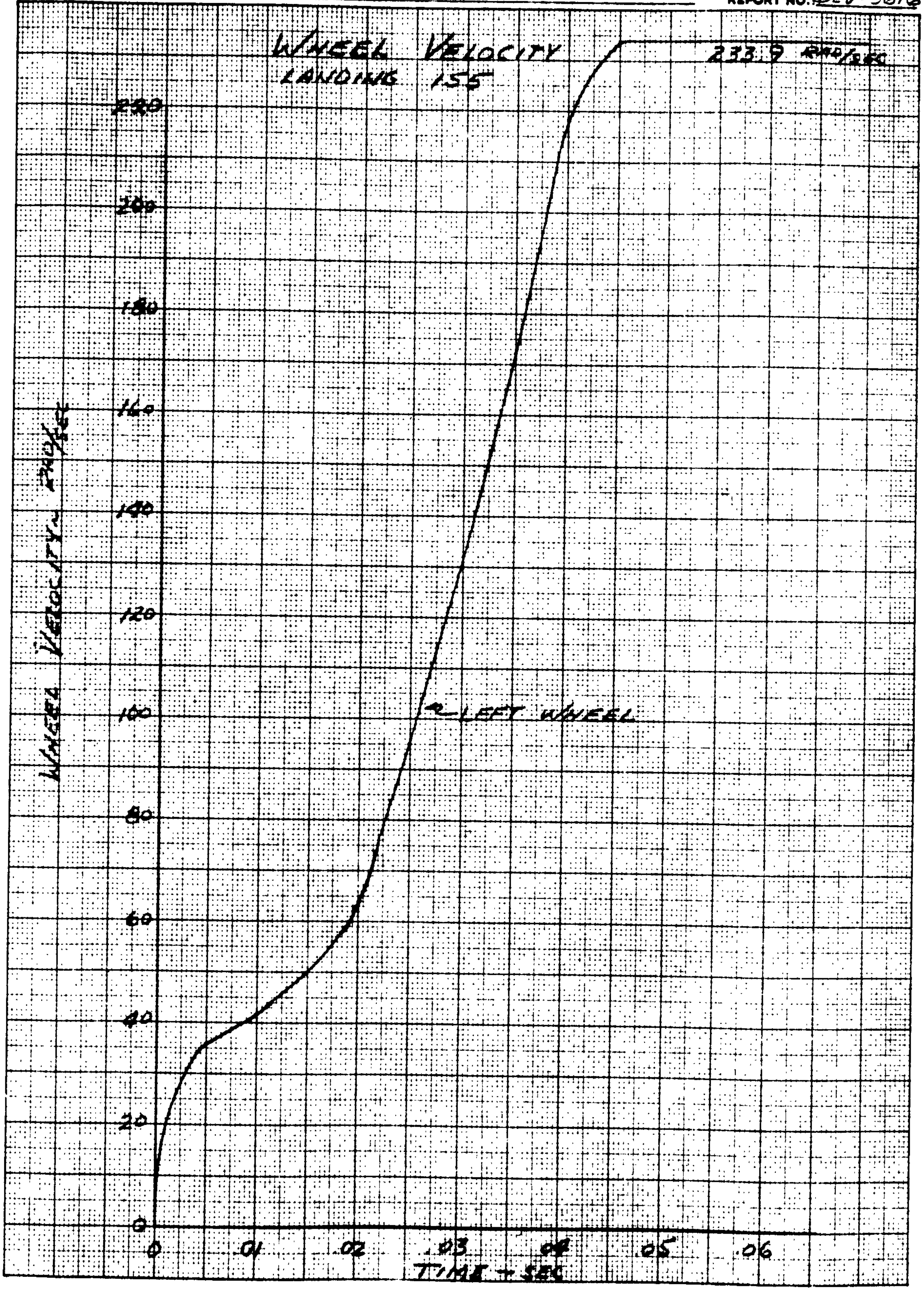
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.7.16

MODEL: A4D-2

REPORT NO.: DEV-3616



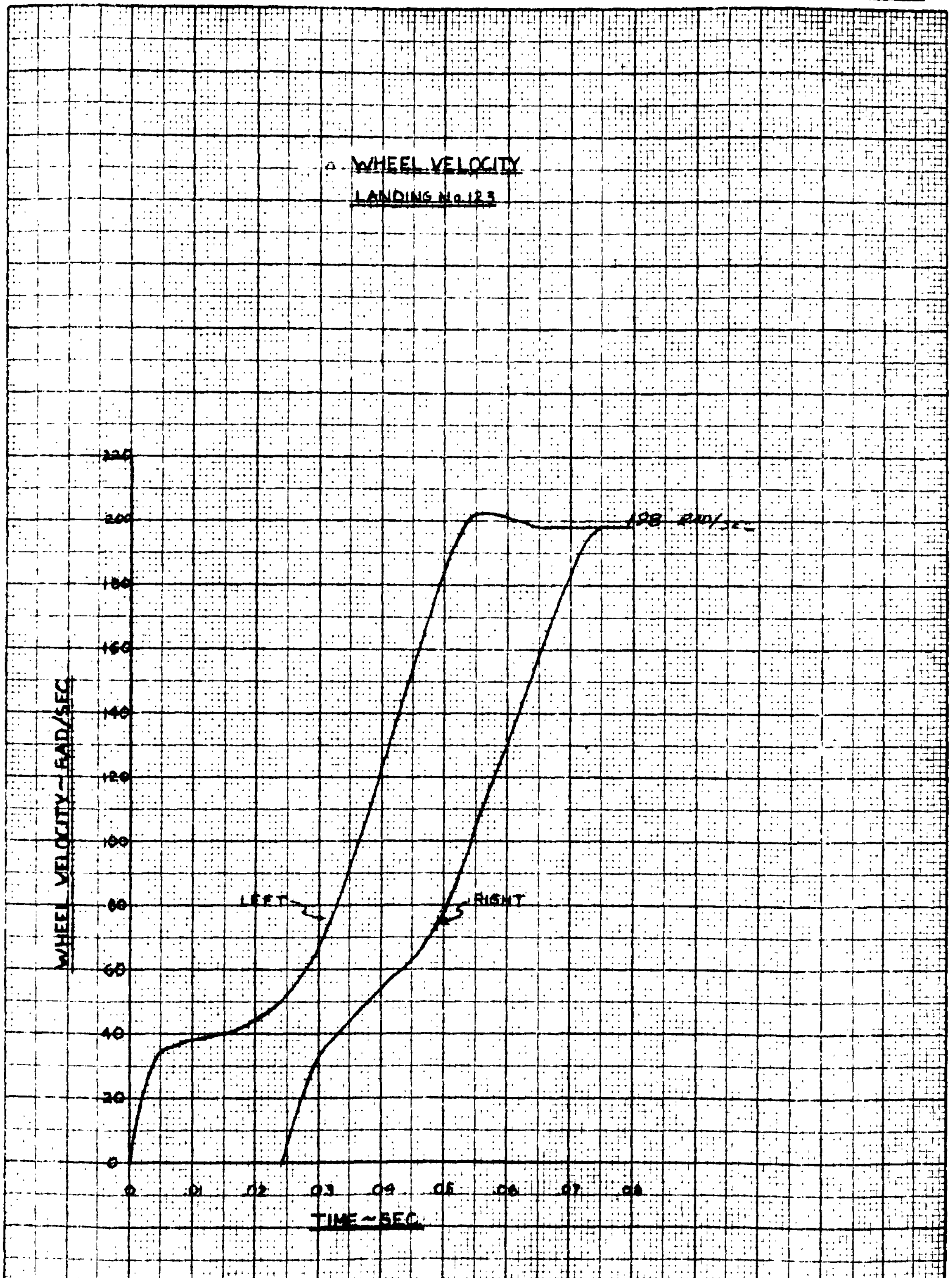
K+E ALBANENE 106L ® TRACING PAPER

149

FORM 25 B3 (REV. 3-54) PREPARED BY: B.D.
CHECKED BY
DATE: 7-31-62
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.
DIVISION

PAGE: 8.7.17
MODEL: A4D-2
REPORT NO.: DEV-3616



K+E ALBANENE TRACING PAPER

FORM 25 US (REV. 3-54)

PREPARED BY: B.D

CHECKED BY:

DATE: 7-31-62

TITLE:

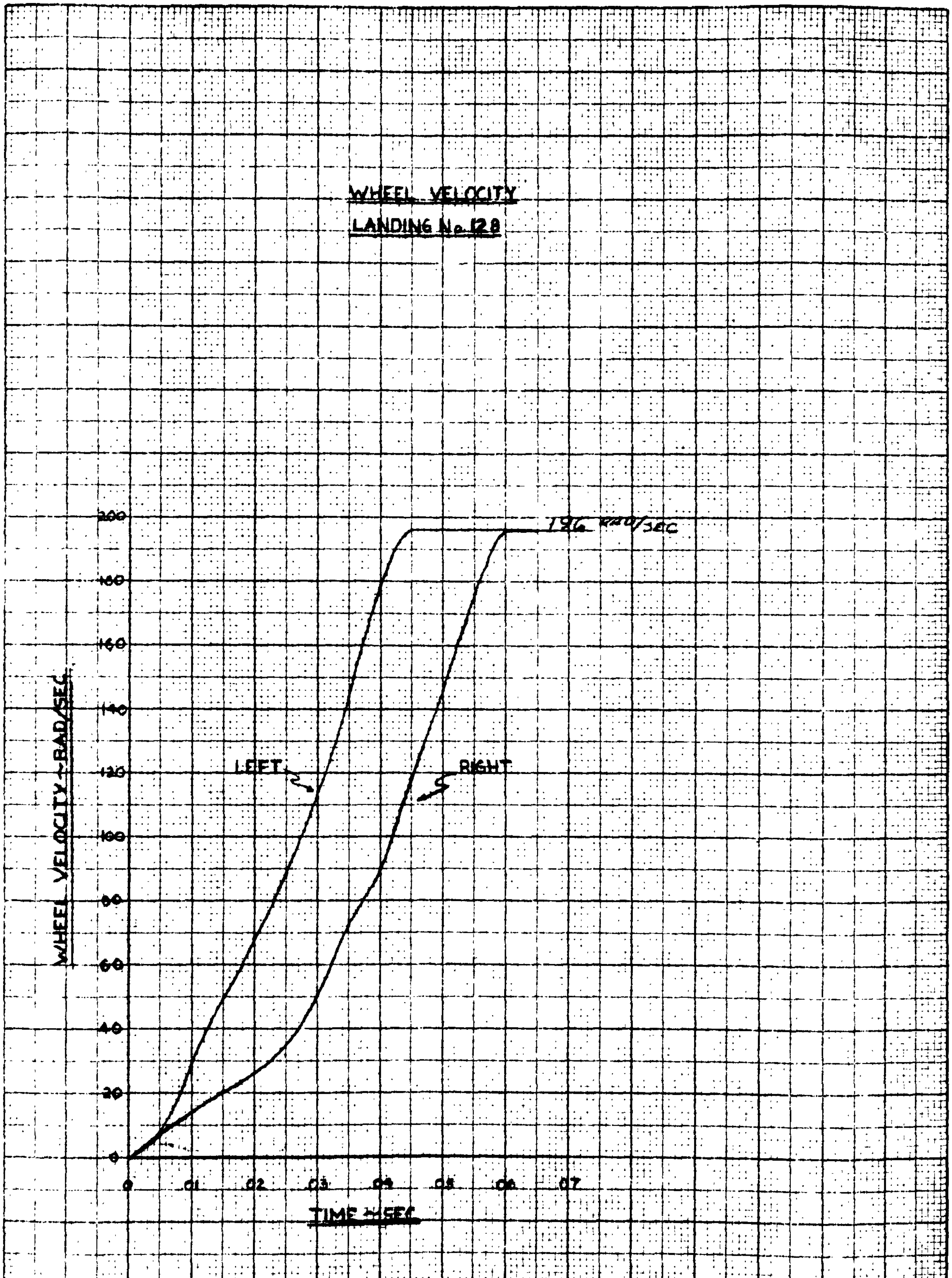
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.7.18

MODEL: A4D-2

REPORT NO.: DEV-3616



K+E

VERTICAL & HORIZONTAL SPEEDS
OBTAINED FROM DAC PHOTOSCOPE

LANDING NO.	V_V = VERTICAL SPEED ~ FPS						V_H = HORIZONTAL SPEED ~ FPS					
					AVE	S_{AVE}					AVE	S_{AVE}
8	11.44	10.92	10.40	11.40	11.04	0.29	216.0	216.0	218.0	-	216.7	0.67
26	11.56	11.06	11.60	-	11.41	0.17	207.0	207.5	207.5	-	207.2	0.19
49	11.04	10.94	-	-	10.99	0.05	185.0	185.0	-	-	185.0	0
68	15.48	15.88	-	-	15.68	0.20	218.0	-	-	-	218.0	-
70	14.60	14.60	-	-	14.60	0	211.0	211.5	-	-	211.3	0.25
121	12.40	12.68	-	-	12.54	0.14	179.2	178.5	-	-	178.9	0.35
125	13.76	14.00	-	-	13.88	0.12	191.0	191.0	-	-	191.0	0
126	15.32	15.74	-	-	15.53	0.21	187.0	187.0	-	-	187.0	0
93	15.20	14.96	15.40	15.50	15.27	0.12	220.0	221.5	220.0	222.0	221.4	0.60
95	14.74	14.68	14.62	14.68	14.68	0.03	217.0	217.0	217.5	217.5	217.3	0.15
113	12.20	12.00	11.58	11.86	11.91	0.13	191.5	190.0	191.0	192.0	191.1	0.43
114	15.88	15.86	15.62	15.66	15.76	0.07	186.5	186.5	186.5	186.0	186.4	0.12
117	16.24	15.30	16.52	-	16.02	0.37	187.0	185.0	186.0	-	186.0	0.06
120	12.24	11.78	12.34	-	12.12	0.17	187.0	188.0	186.0	-	187.0	0.06
131	11.60	12.02	11.82	12.32	11.94	0.15	217.0	215.5	216.5	215.0	216.0	0.46
133	12.34	12.64	12.24	-	12.41	0.12	217.5	217.5	217.0	-	217.3	0.17
146	9.16	9.20	9.78	-	9.38	0.20	225.0	225.5	225.0	-	225.2	0.17
150	12.60	11.44	11.80	-	11.95	0.34	226.0	226.5	225.5	-	226.0	0.29
151	10.04	9.96	10.28	-	10.09	0.10	227.5	226.0	227.5	-	227.0	0.50
152	16.58	16.78	17.38	-	16.91	0.24	230.0	230.5	230.5	-	230.5	0.20
153	14.16	12.96	14.54	-	13.89	0.48	225.0	226.5	227.0	-	226.2	0.60
155	14.76	14.64	14.84		14.74	0.06	224.0	225.0	225.5		224.8	0.44
167	12.76	12.64	-	-	12.70	0.06	209.0	209.0	-	-	209.0	0
168	10.02	9.96	-	-	9.99	0.03	209.0	210.0	-	-	209.5	0.50
170	12.46	12.42	-	-	12.44	0.02	220.0	221.0	-	-	220.5	0.50
171	11.60	11.80	-	-	11.70	0.10	218.0	217.0	-	-	217.5	0.50
173	10.74	10.70	-	-	10.72	0.02	192.8	192.0	-	-	192.4	0.40
128	13.44	13.34	-	-	13.39	0.05	183.5	184.0	-	-	183.8	0.25

S_{AVE} = STANDARD DEVIATION OF THE AVERAGE = $S/\sqrt{k}$

$S = \sqrt{\dfrac{\Sigma(\delta V)^2}{k-1}}$ WHERE δV = DEVIATION FROM AVERAGE SPEED

k = NUMBER OF MEASUREMENTS

251

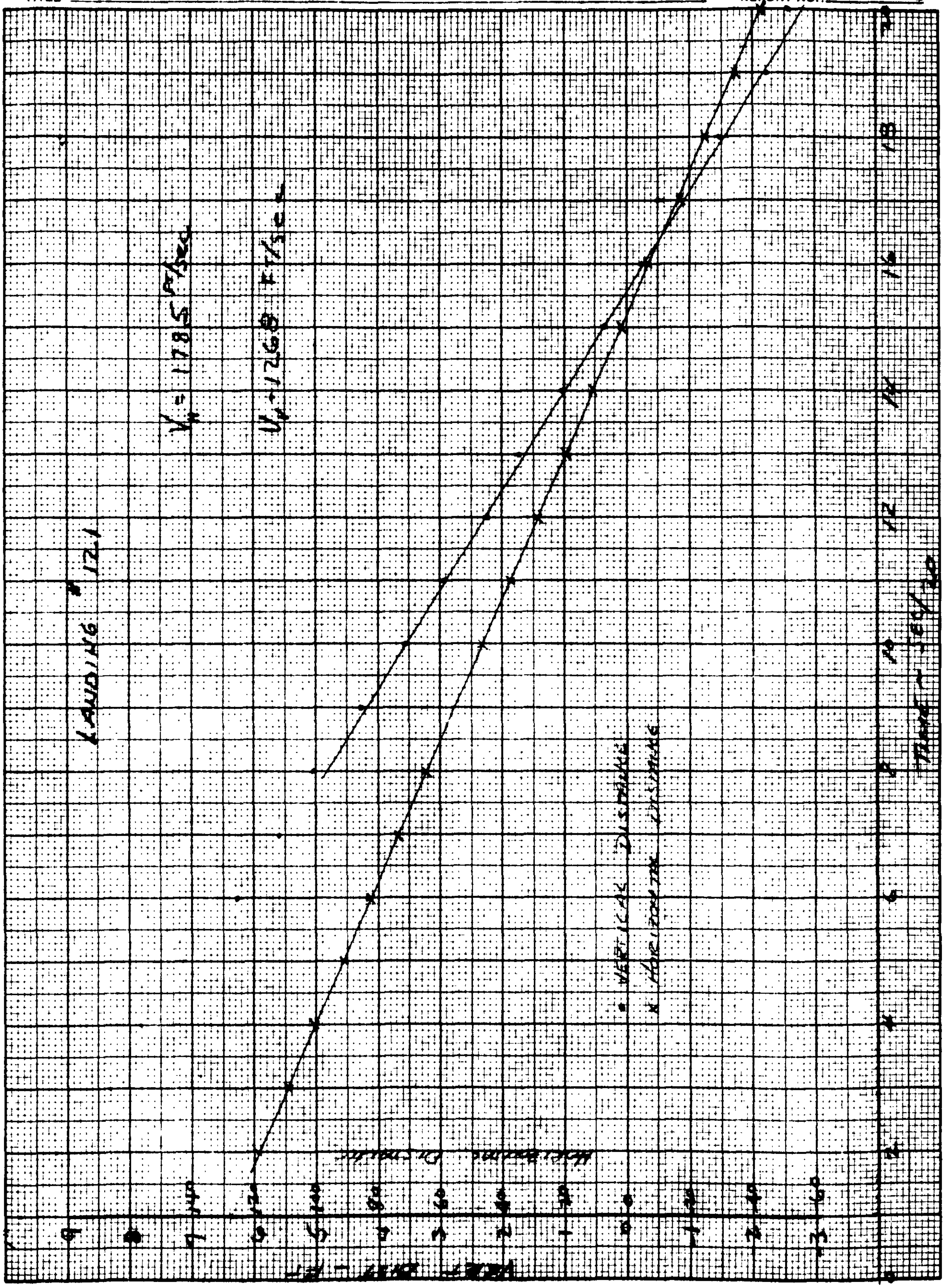
FORM 25 B6 (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 5.8.2
MODEL: A4D-2
REPORT NO. DEU-3616



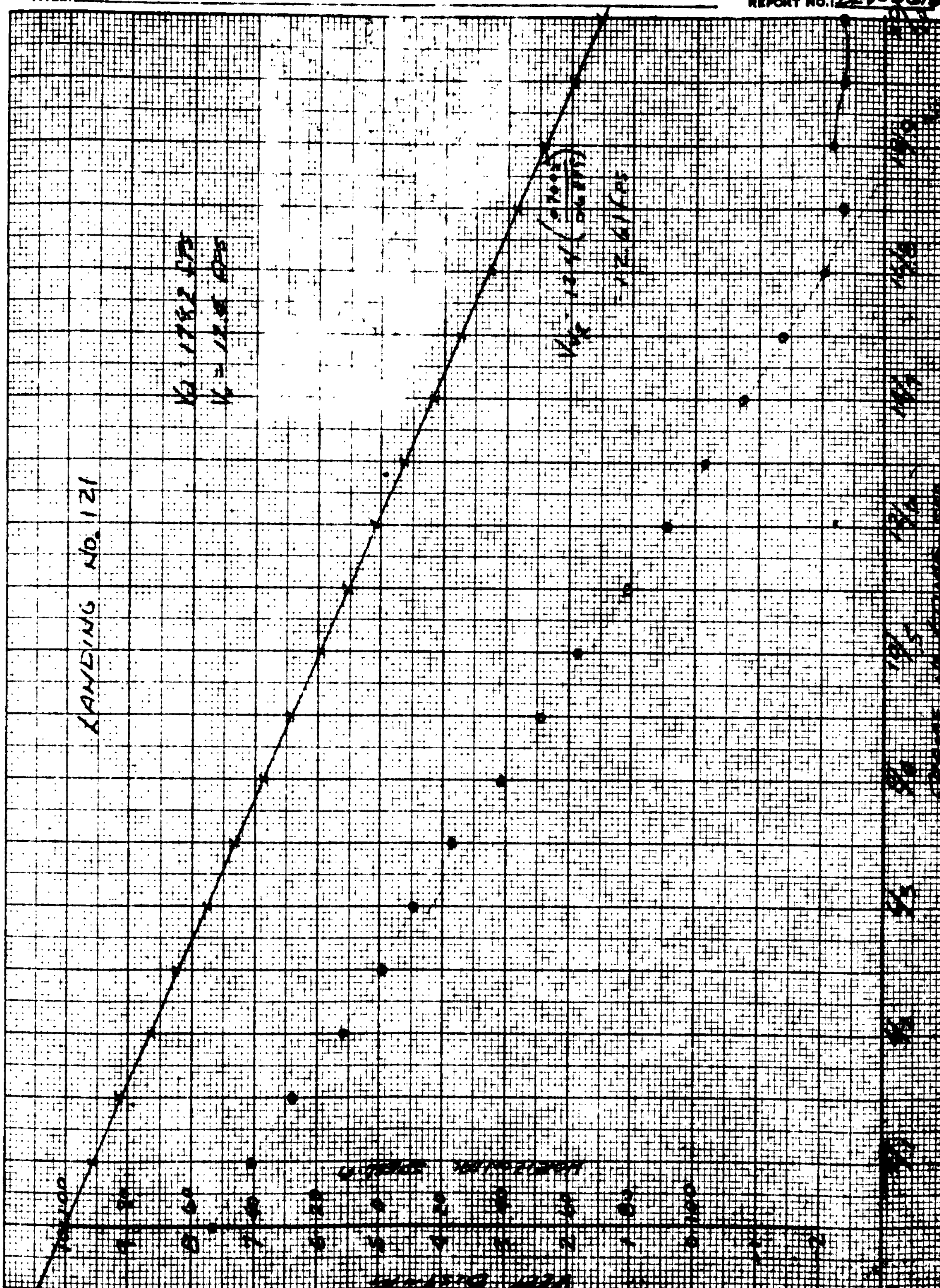
FORM 25 BS (REV. 8-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.3
MODEL: A4D-2
REPORT NO.: DEV-3616



K+E

154

FORM 25 F5 REV 1-54

PREPARED BY:

CHECKED BY

DATE

TITLE

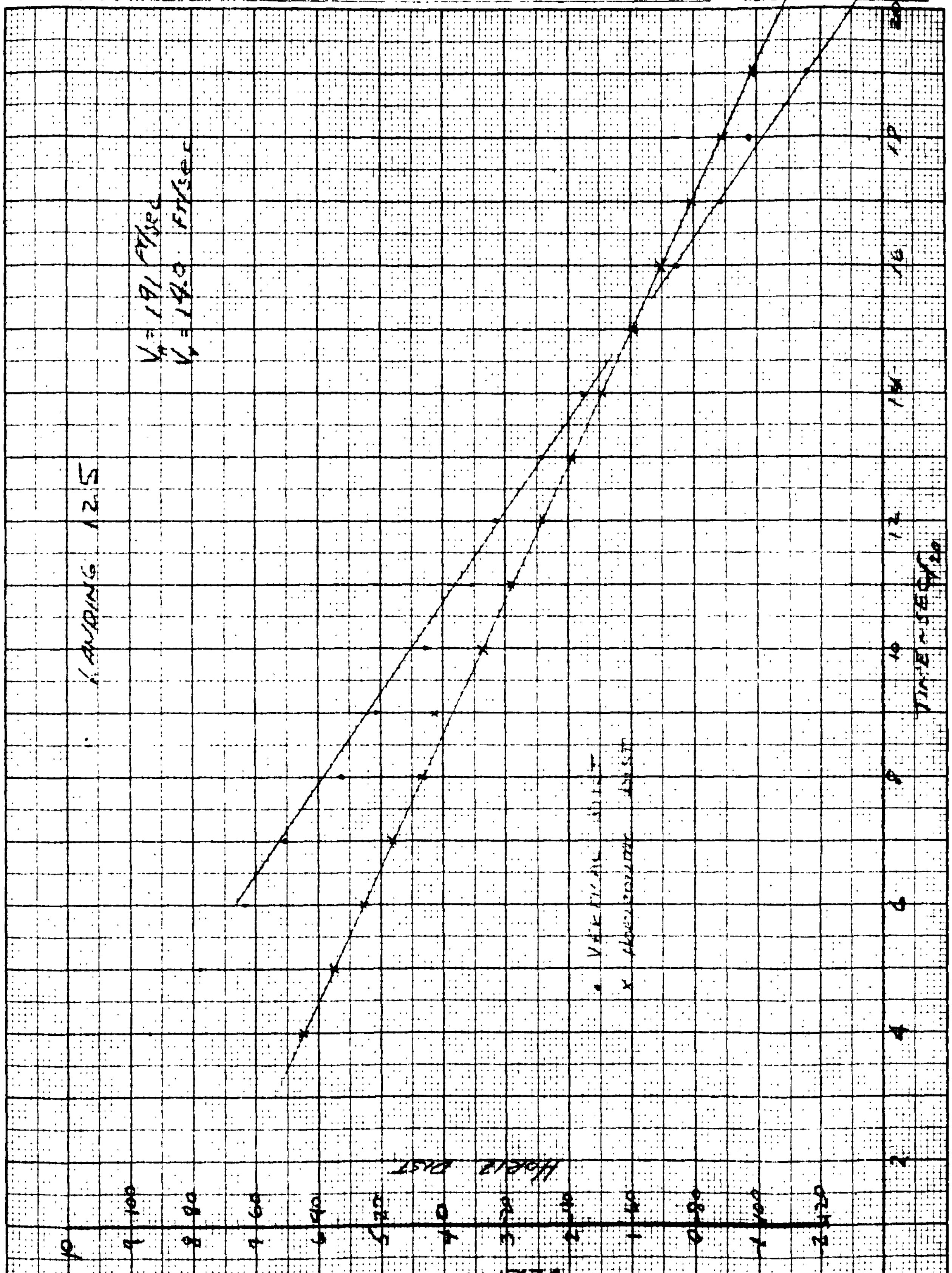
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 3.3.4

MODEL: A4D-2

REPORT NO. DEV-3516



K+E ALBANENE

FORM 28 D5 (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

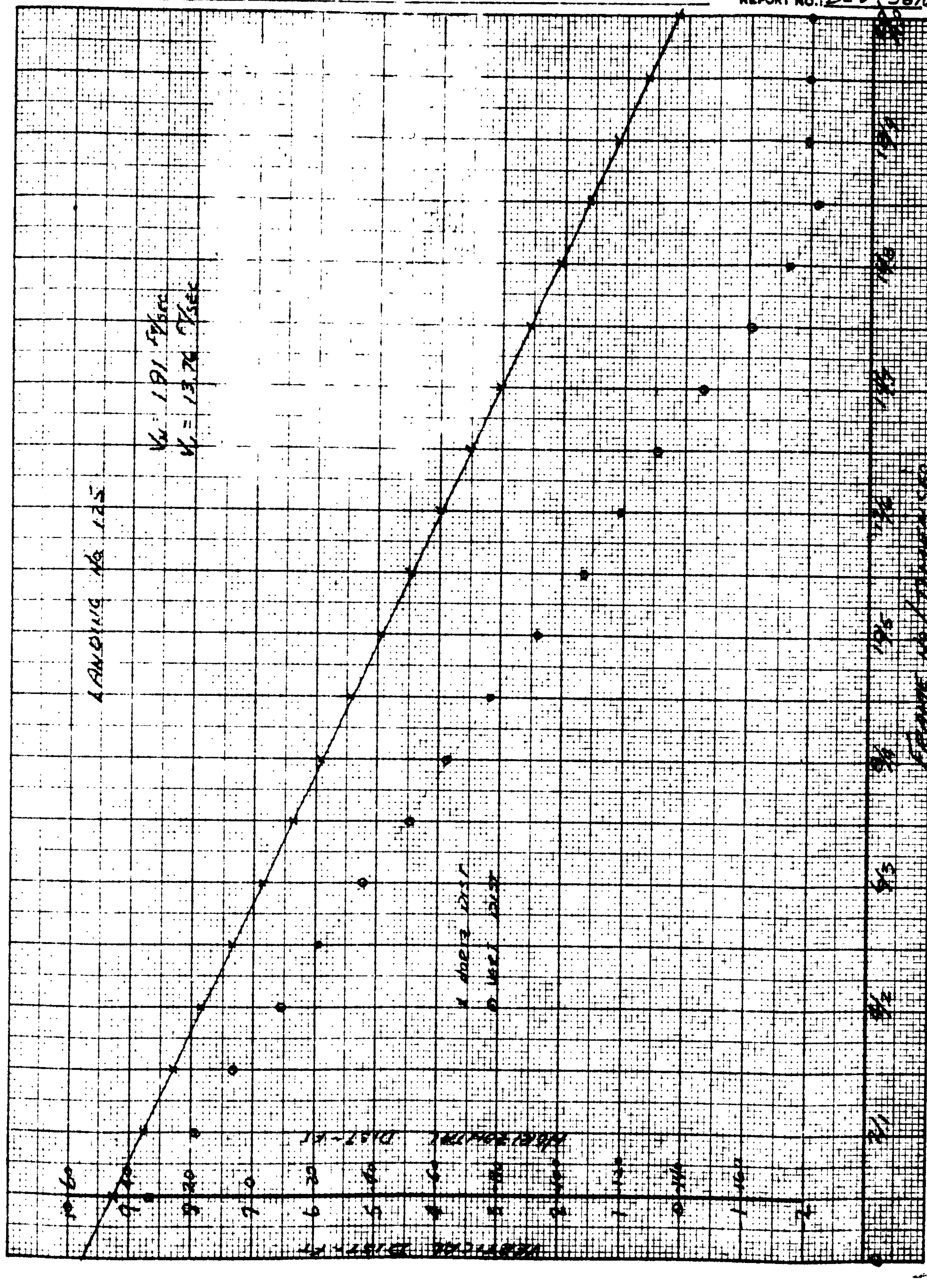
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.5

MODEL: A4D-2

REPORT NO.: DEV-3616



K+E

FORM 25 BS (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE

TITLE:

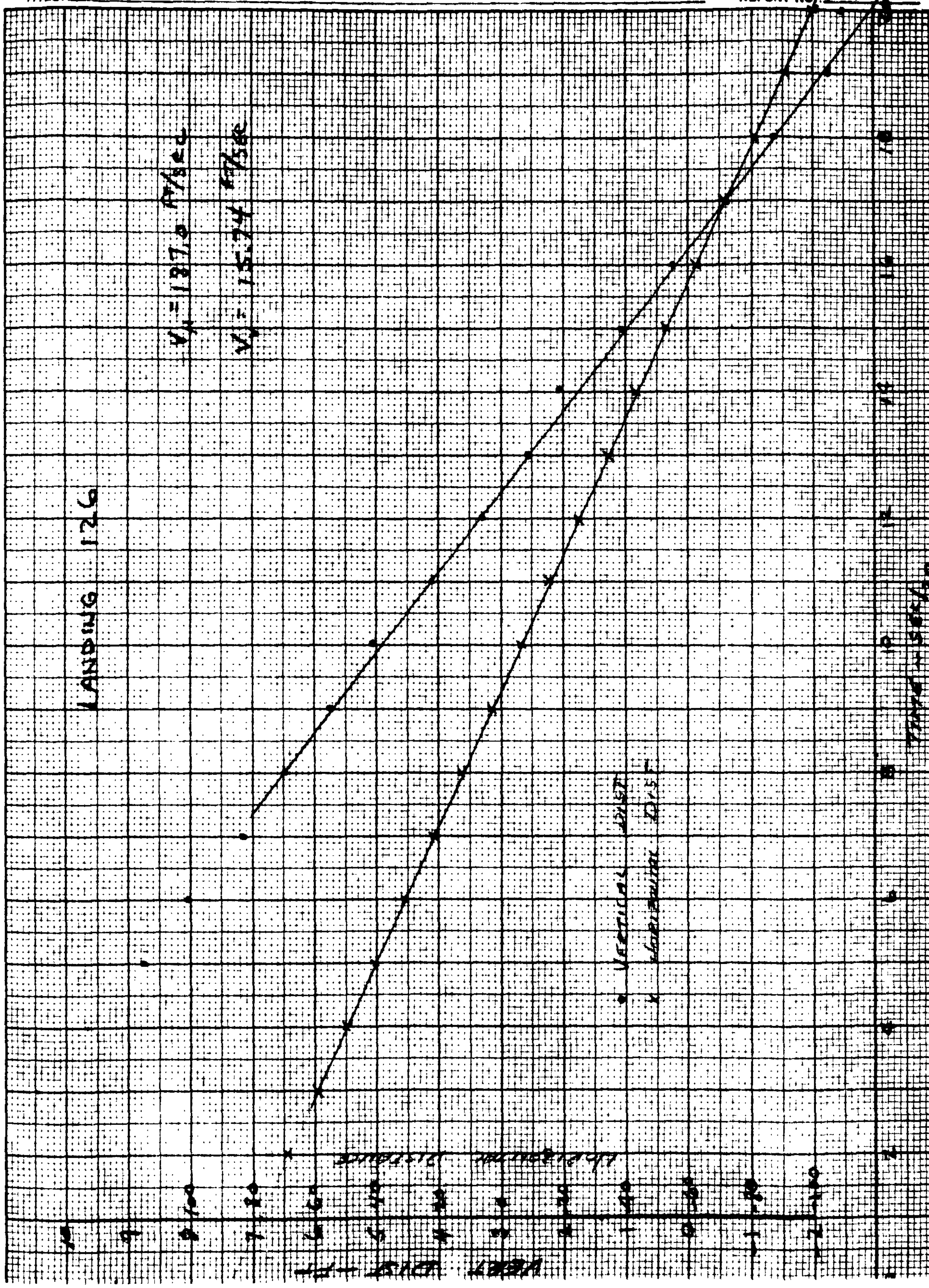
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.6

MODEL: A4D-2

REPORT NO. DEV-3616



K&E ALBANENE

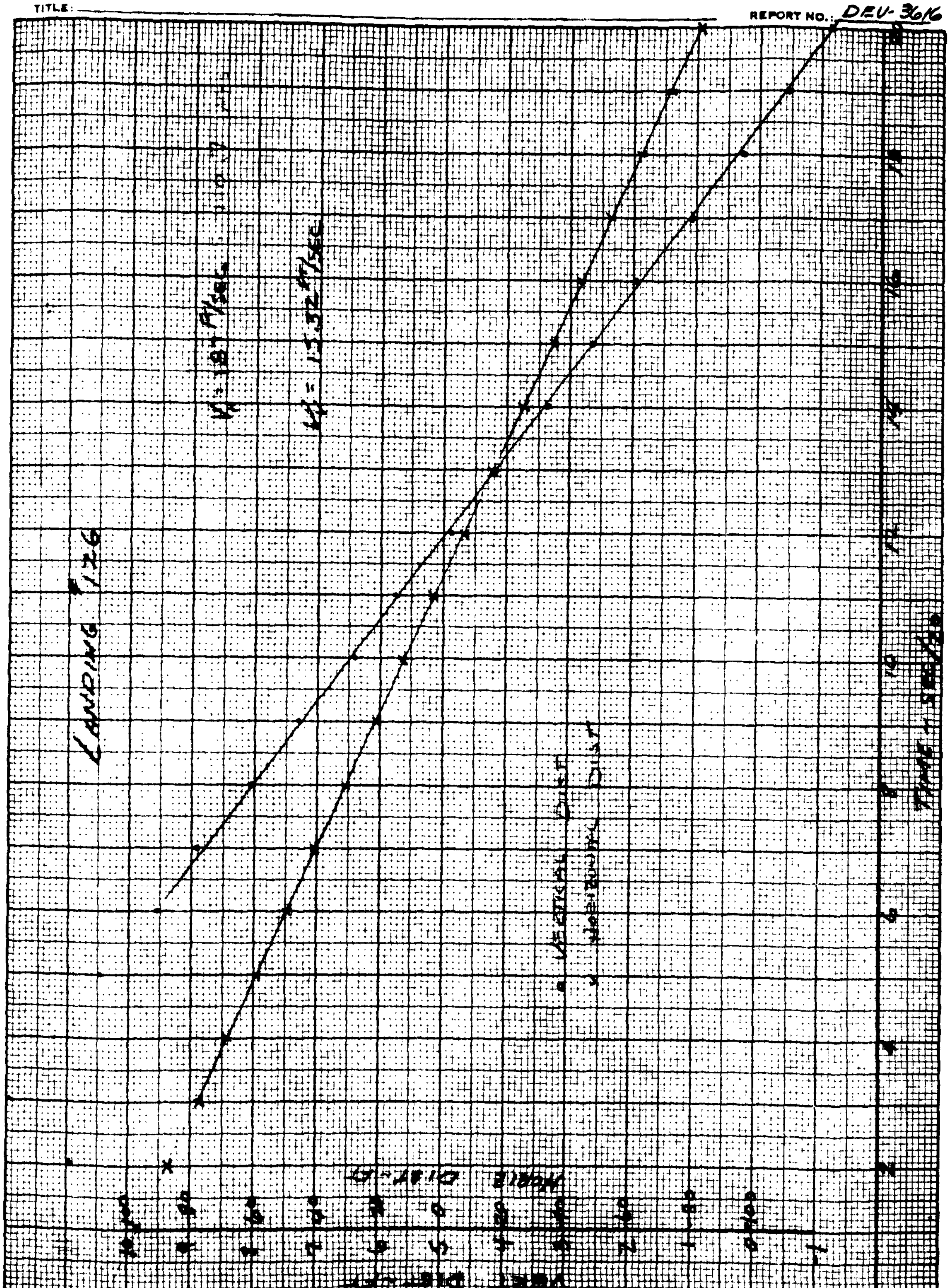
FORM 35 85
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 88.7
MODEL: A40-2
REPORT NO.: DEV-3616



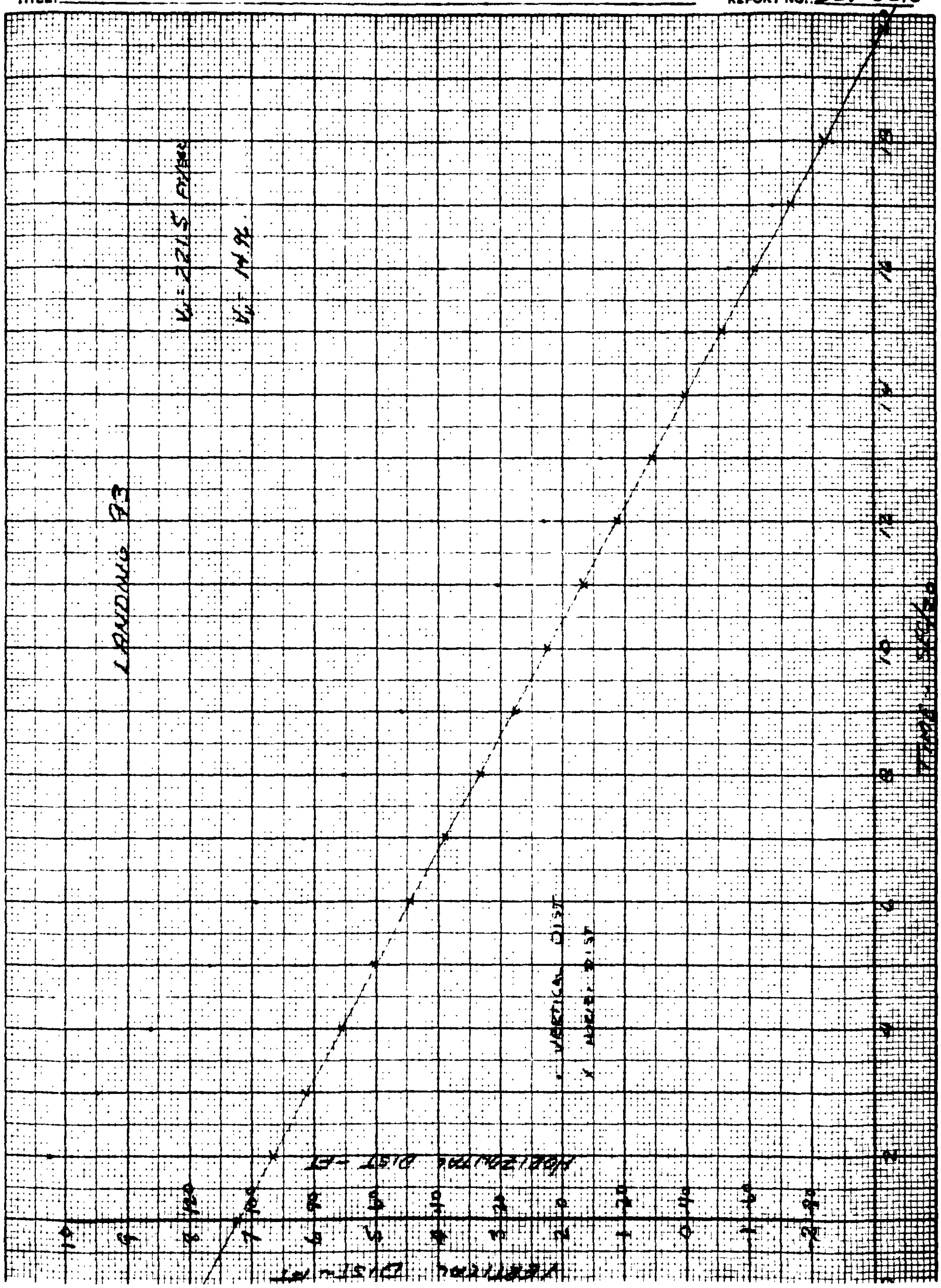
FORM 25 85
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.8
MODEL: A4D-2
REPORT NO.: DEV-3616



K+E ALBANENE TRACING PAPER

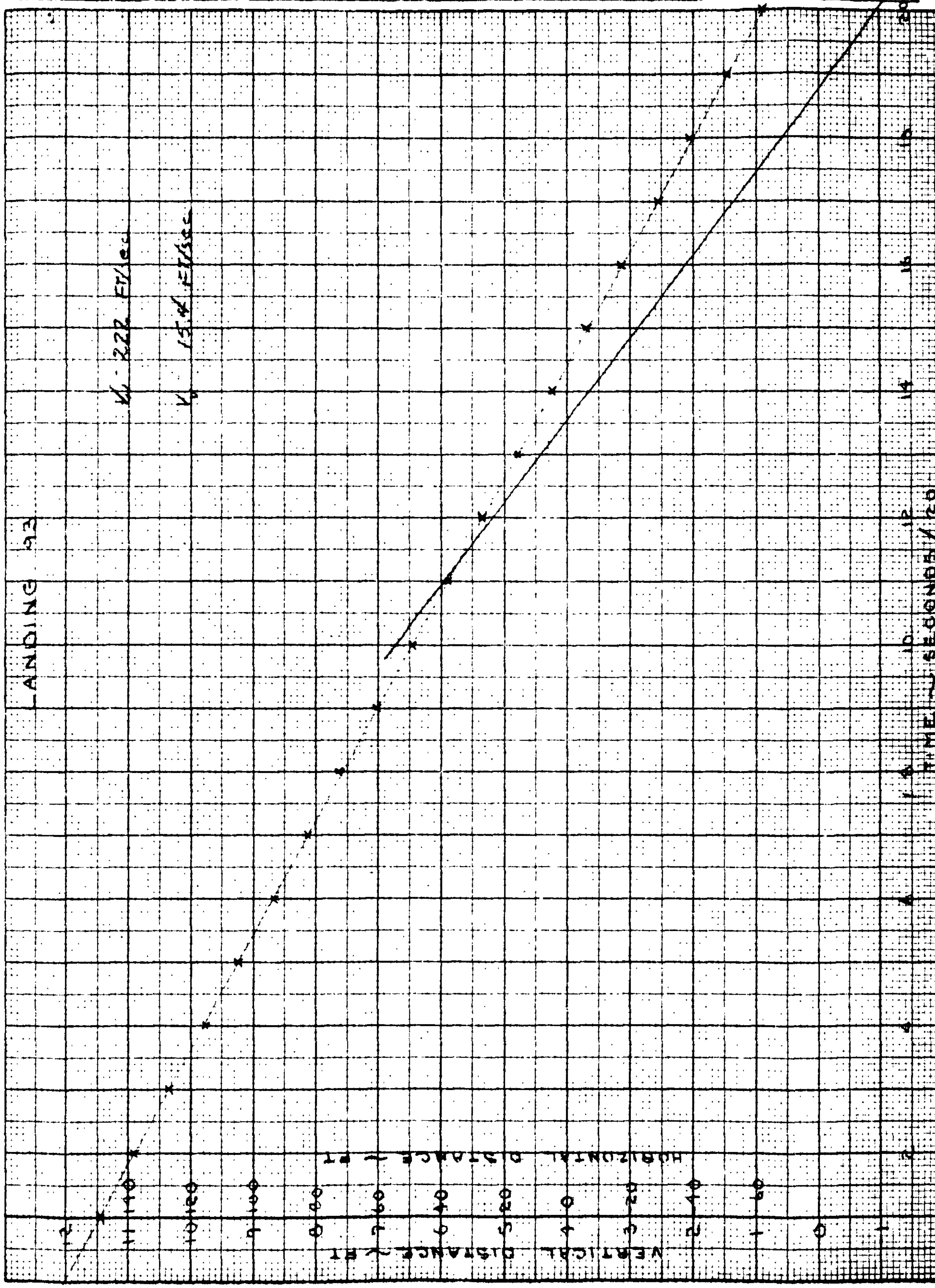
FORM 25-86 (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.9
MODEL: A4D-2
REPORT NO.: DEV-3616



K+E ALBANENE TOOL® TRACING PAPER

FORM 21 (REV ...) PREPARED BY ____ CHECKED BY ____ DATE ____ TITLE ____

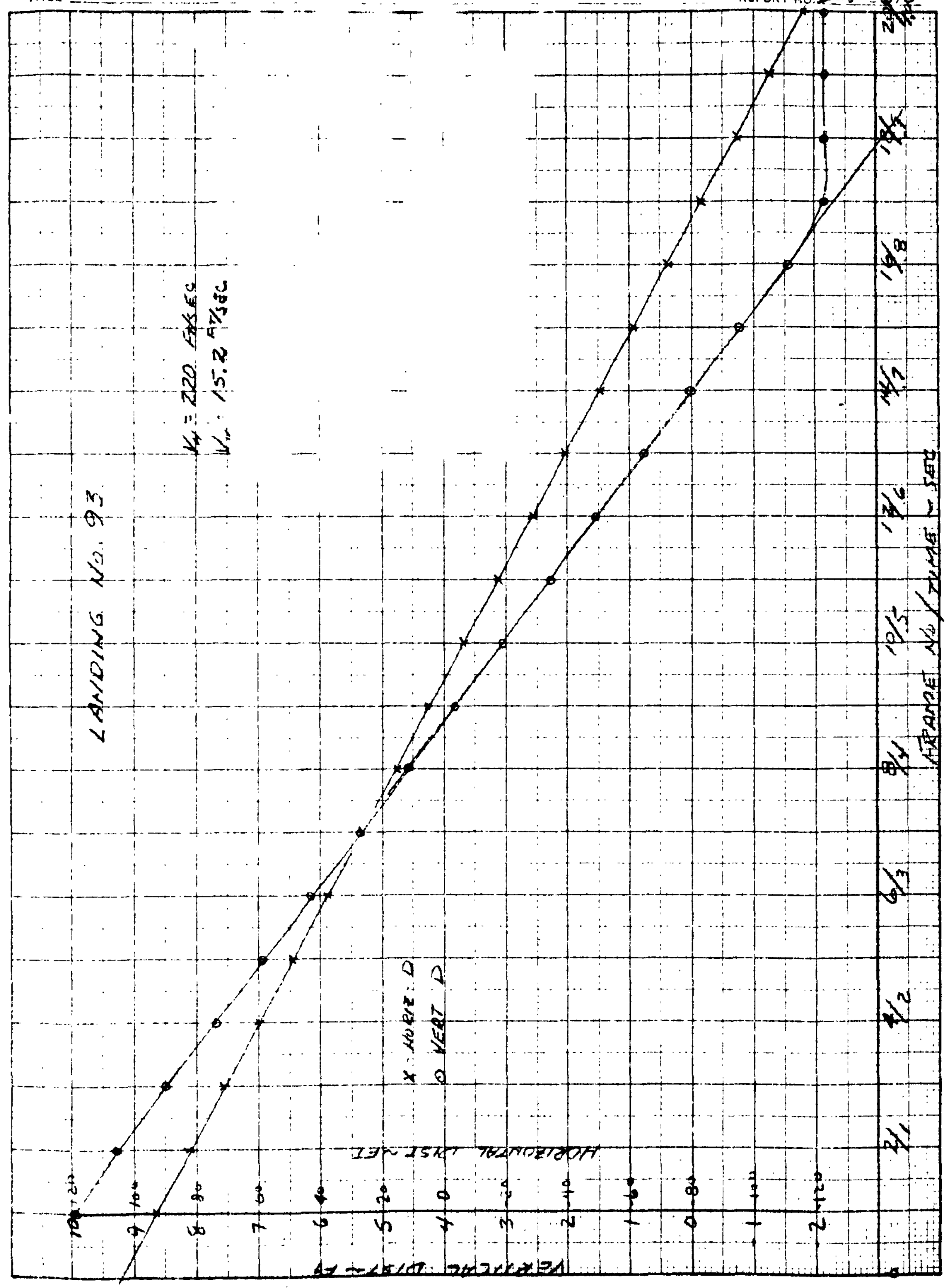
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8 10

MODEL A4D-2

REPORT NO. DEV-3616



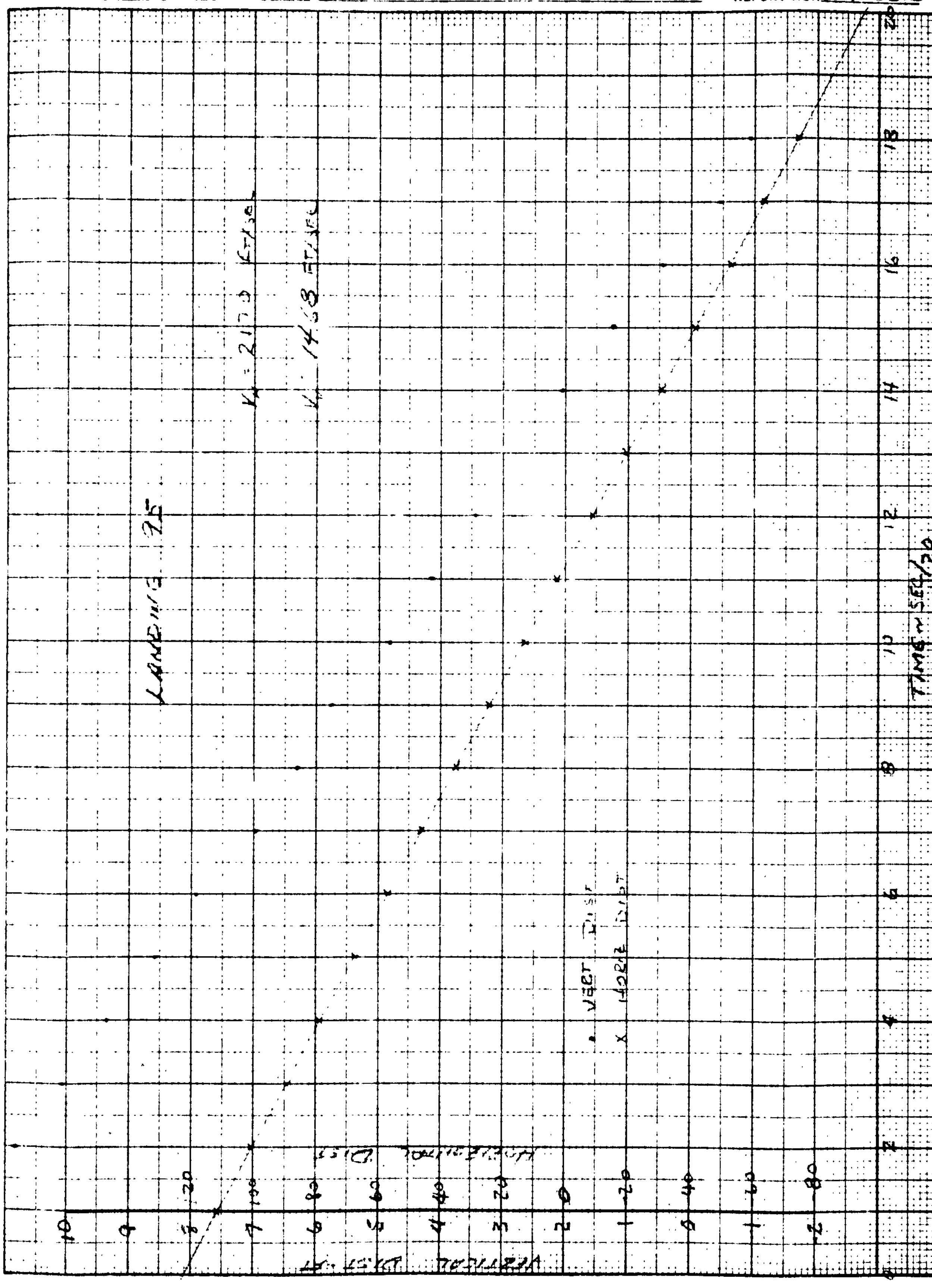
FORM 2F-II (REV. 5-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.3.11
MODEL: A4D-2
REPORT NO. DEV-3616

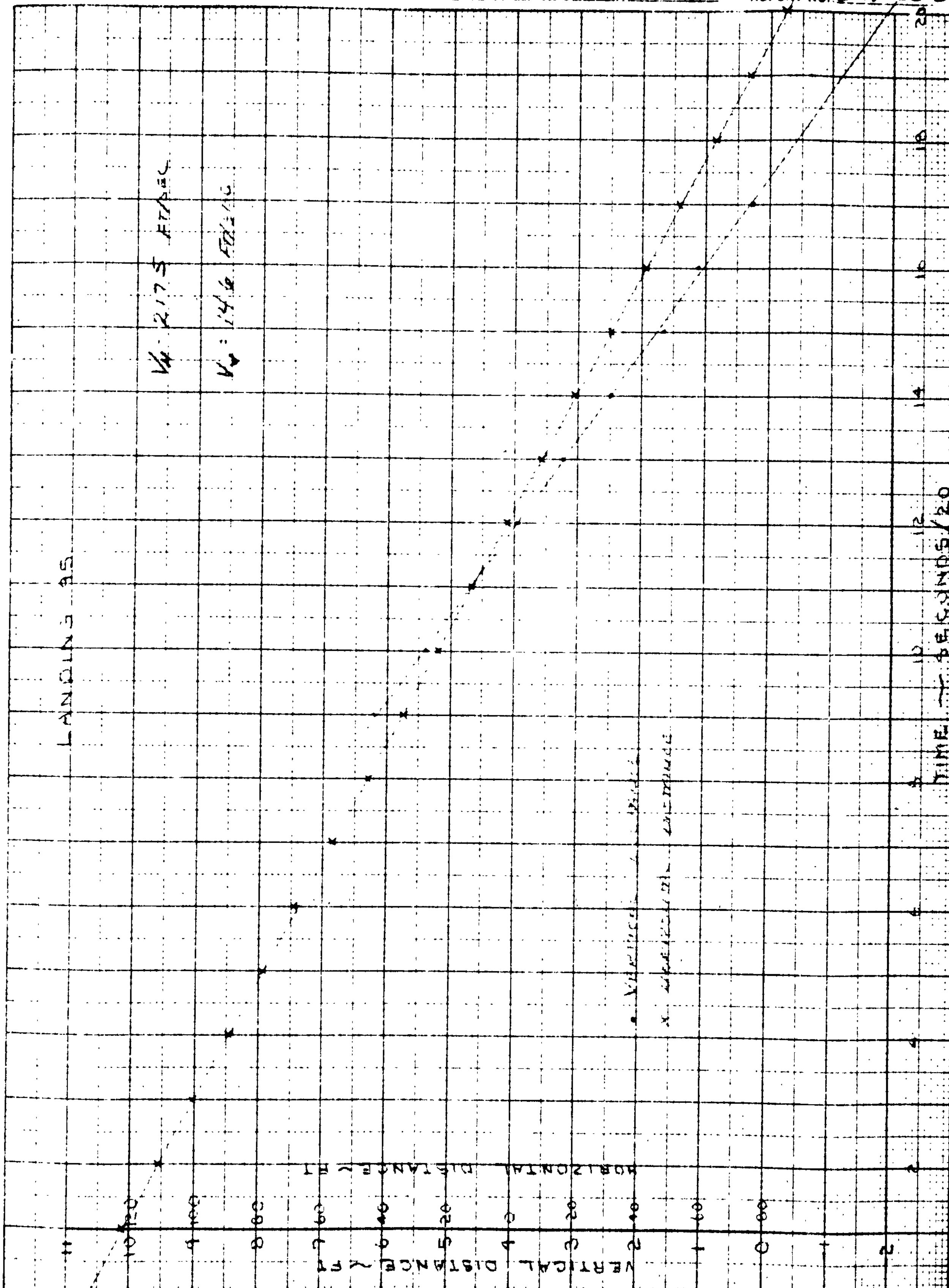


PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.12
MODEL A4D-2
REPORT NO. DEV-3616



FORM 20-08
REV (1-54)

PREPARED BY

CHECKED BY

DATE

TITLE

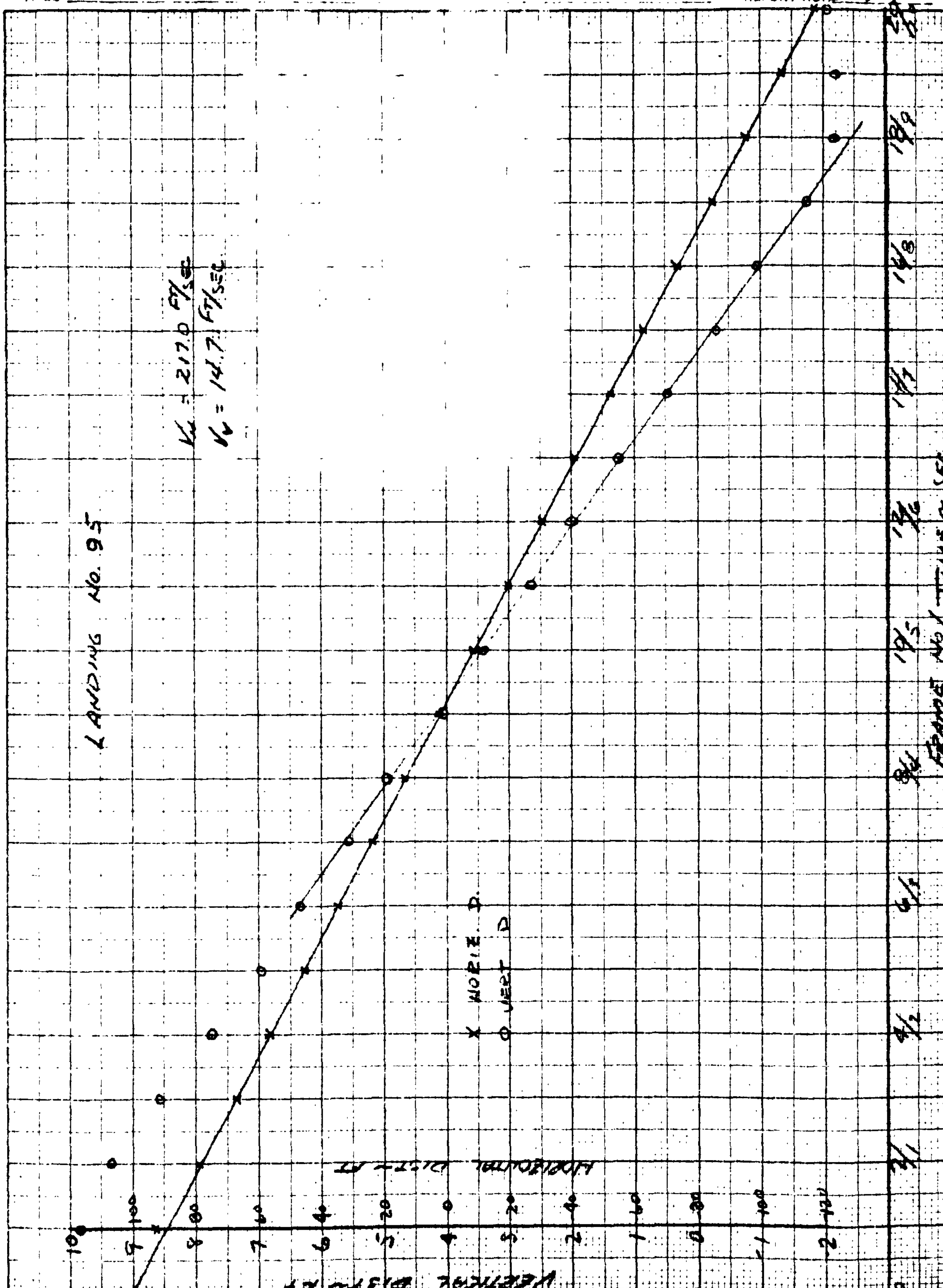
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.3.13

MODEL A4D-2

REPORT NO. DEV 3616



FORM 25 BS
(REV. 3-54)

PREPARED BY

CHECKED BY

DATE:

TITLE:

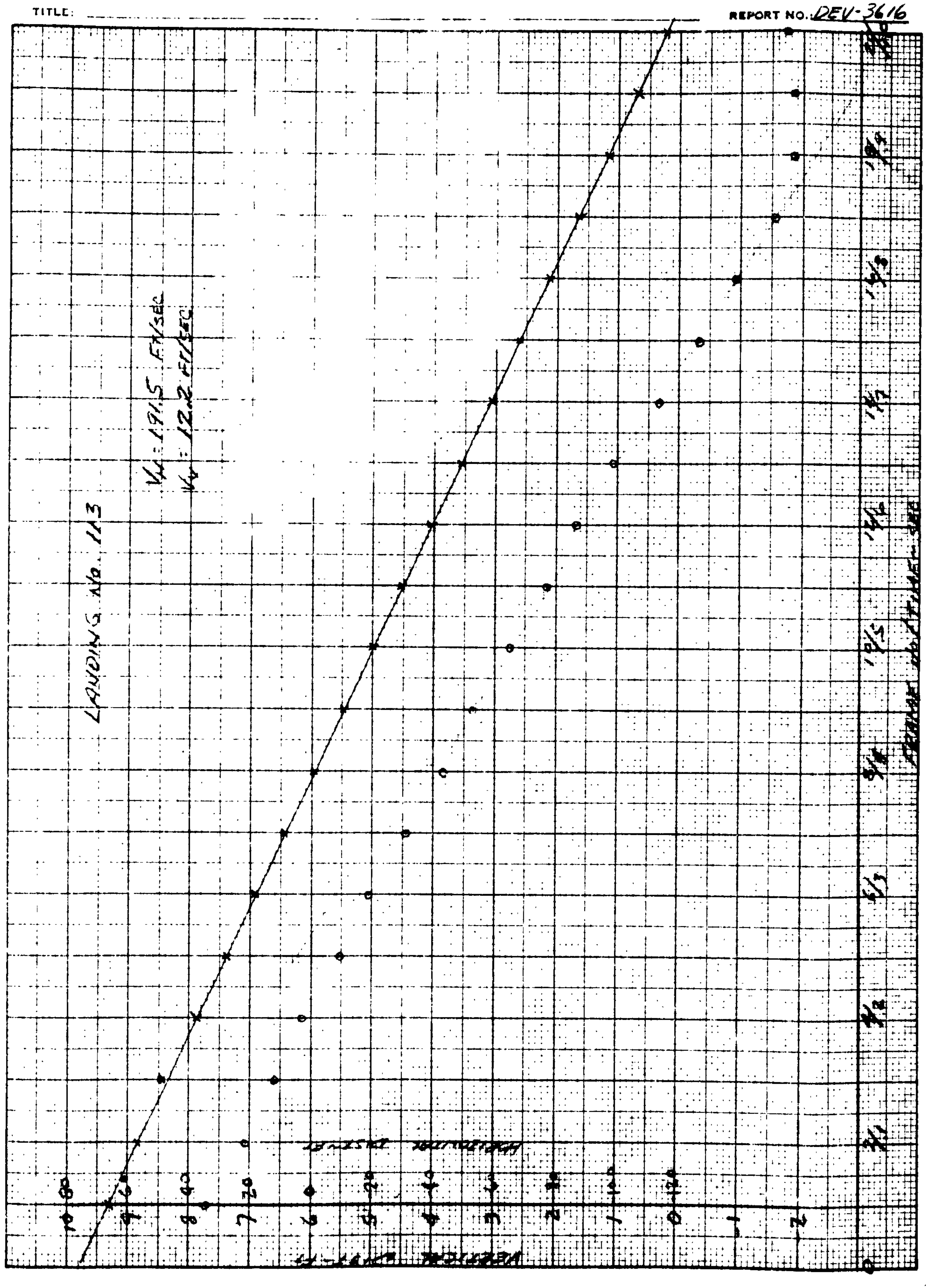
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.14

MODEL: A4D-2

REPORT NO. DEV-3616



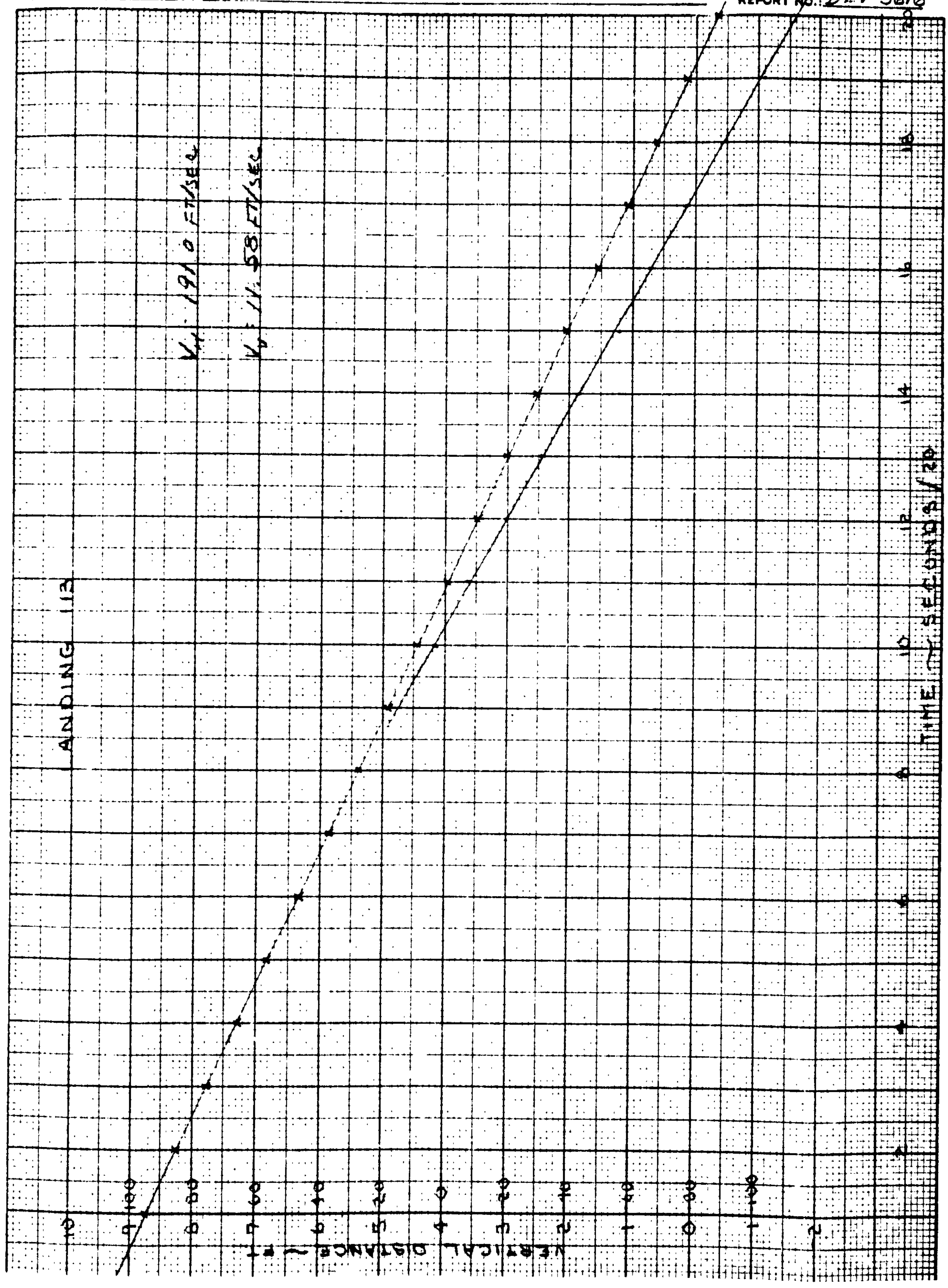
FORM 25 BS
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE
TITLE:

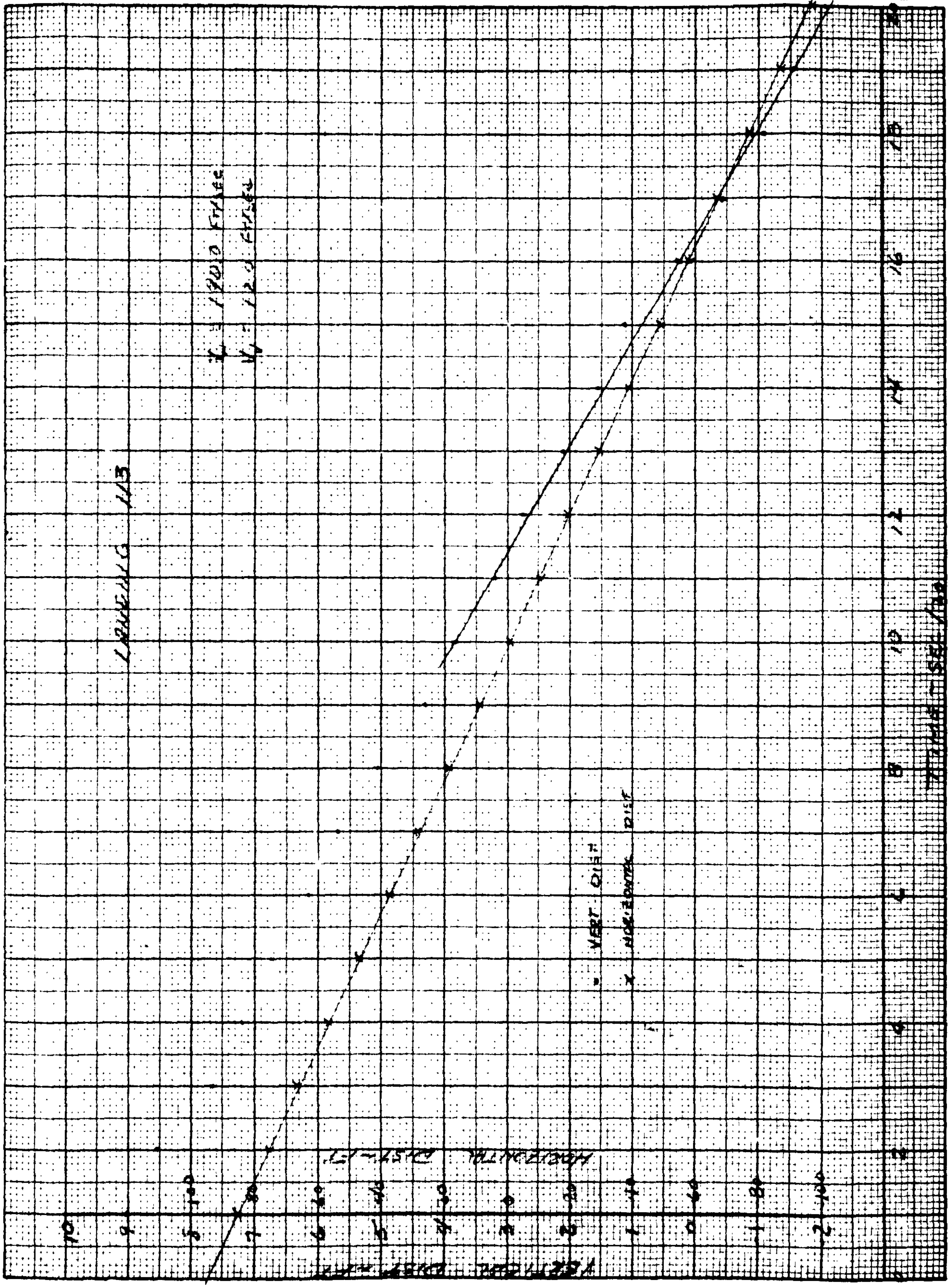
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.15
MODEL: A4D-2
REPORT NO.: LEV-3616



K+E ALBANENE 195L TRACING PAPER


LANDING 113
VERT DIST
HORIZONTAL DIST

FORM 26 83
(REV. 3-64)

PREPARED BY:

CHECKED BY

DATE

TITLE

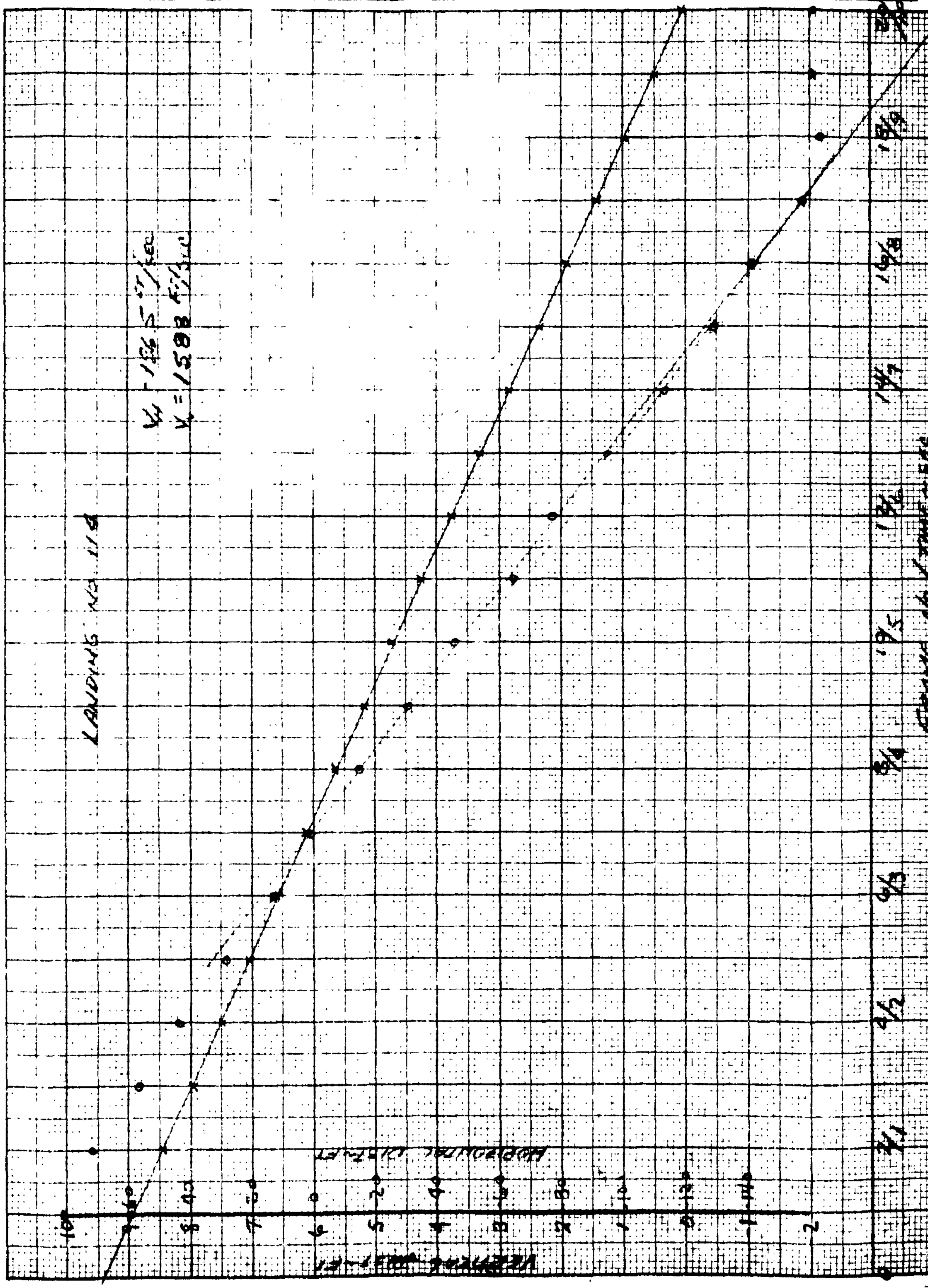
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.17

MODEL: A4D-2

REPORT NO. DEV-3616



K·E

FORM 25 BS (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

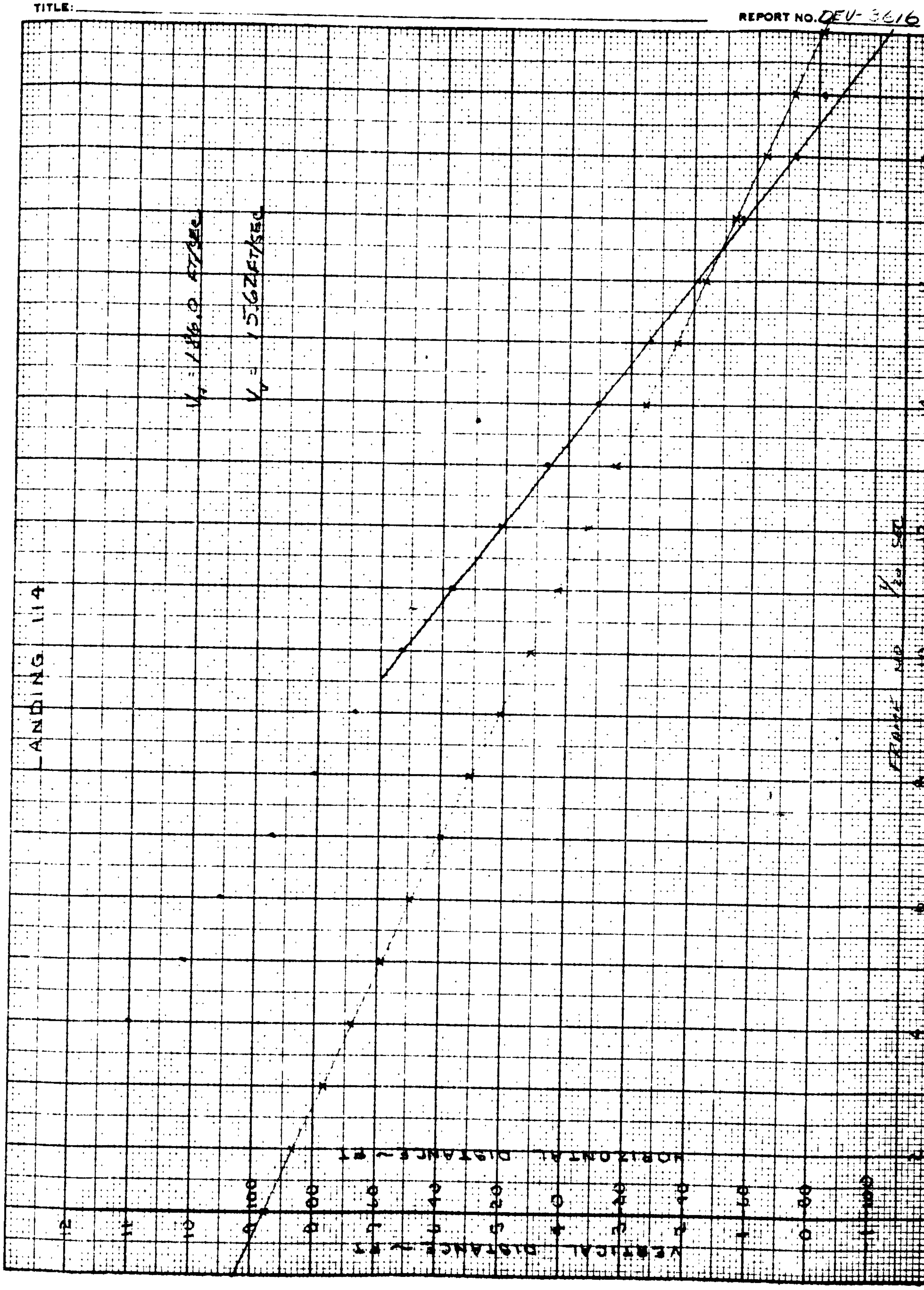
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.18

MODEL: A4D-2

REPORT NO. DEV-3616



K&E ALBANENE 195L TRACING PAPER

671

FORM 25-65 (REV. 3-64)

PREPARED BY:

CHECKED BY

DATE

TITLE:

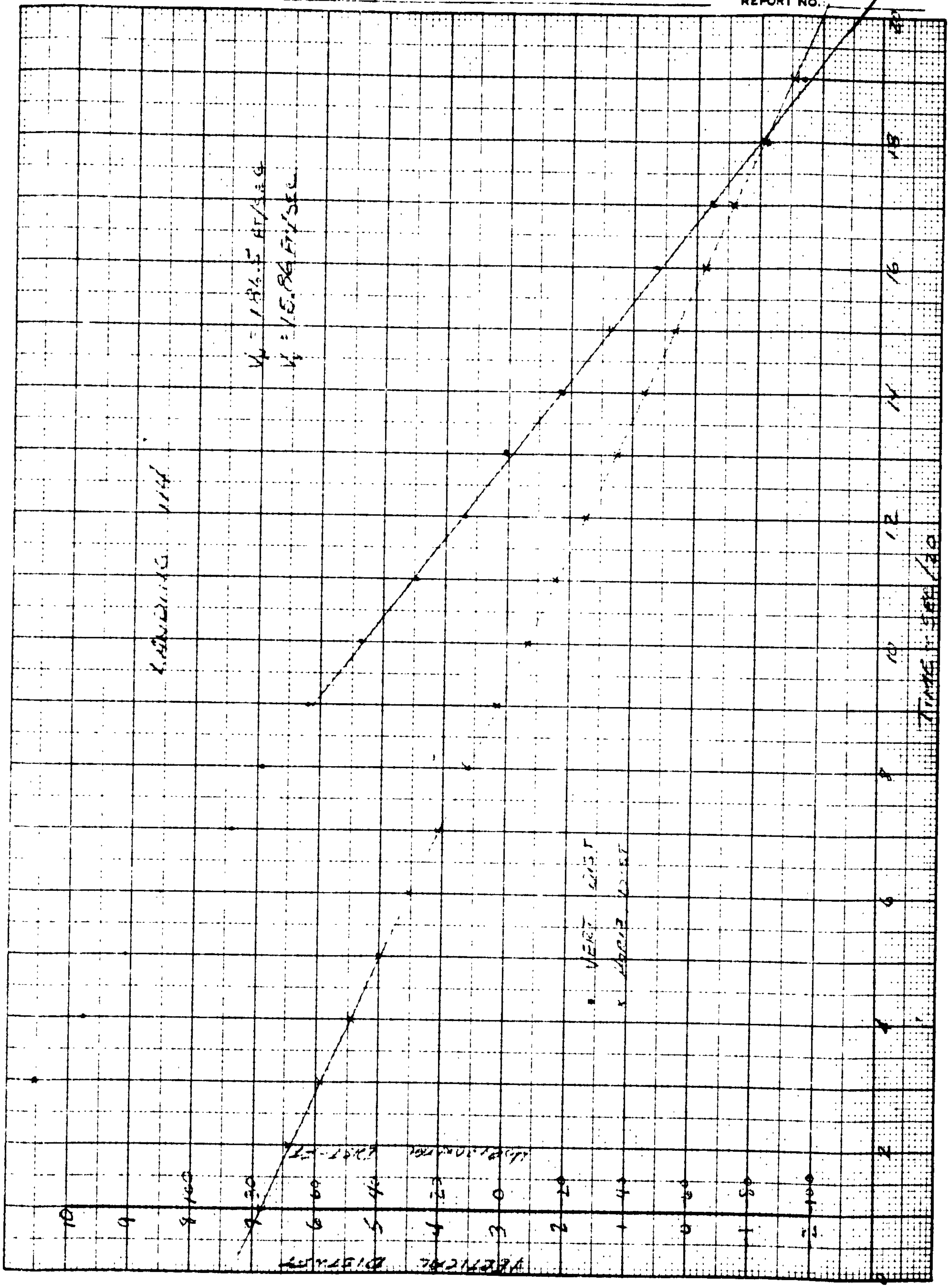
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 88.19

MODEL: A4D-2

REPORT NO.



K+E ALBANENE

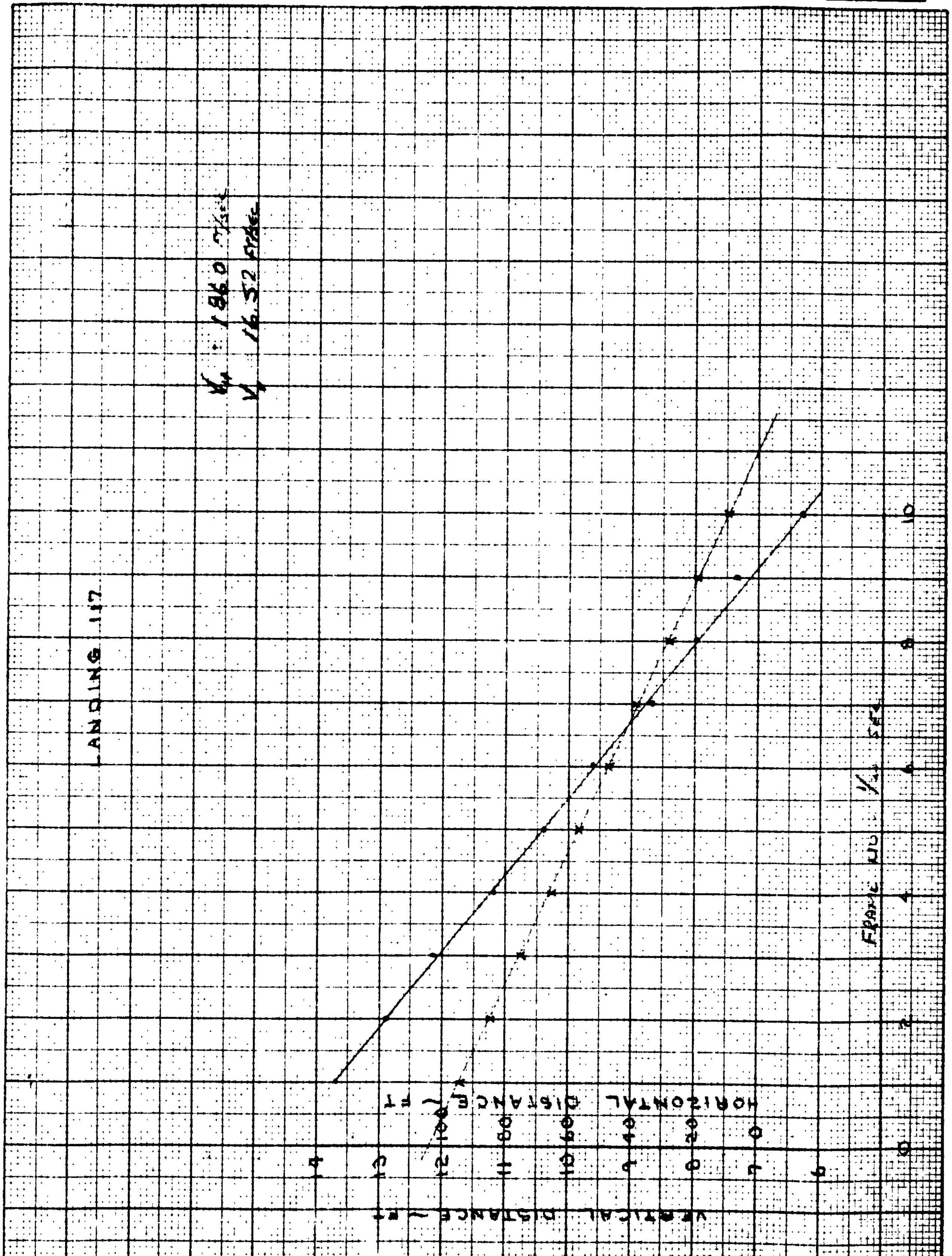
FORM 25 BS
(REV. 3-54)

PREPARED BY:
CHECKED BY
DATE
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.20
MODEL: A4D-2
REPORT NO.: DEV-3016



K+E ALBANENE 196L TRACING PAPER

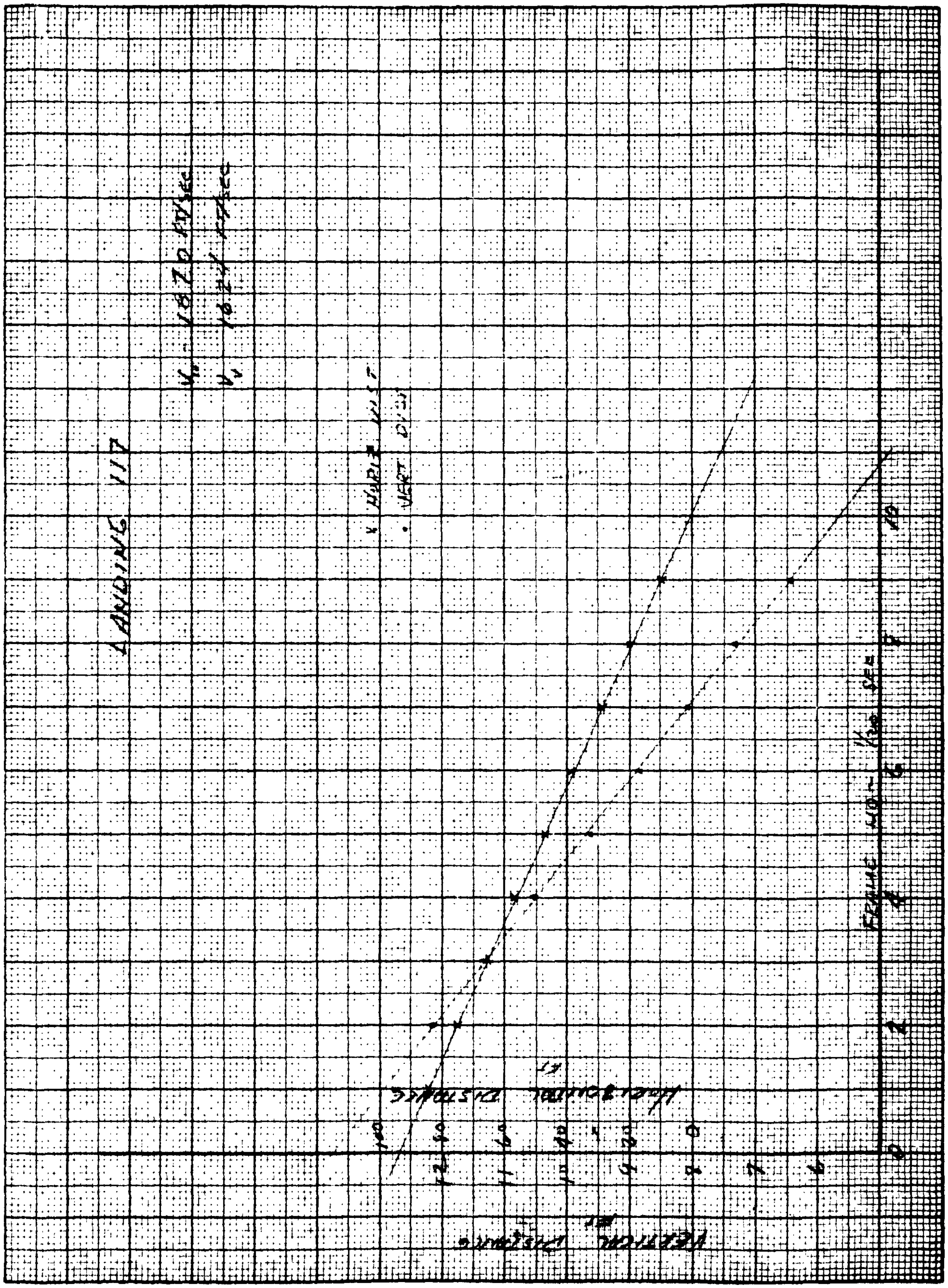
1/1

FORM 25 86 (REV. 3-54) PREPARED BY: CHECKED BY: DATE: TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.21
MODEL: A4D-2
REPORT NO.: DEV-3616



K&E ALBANENE TRACING PAPER

172

FORM 20-85 (REV. 3-54)

PREPARED BY

CHECKED BY

DATE

TITLE:

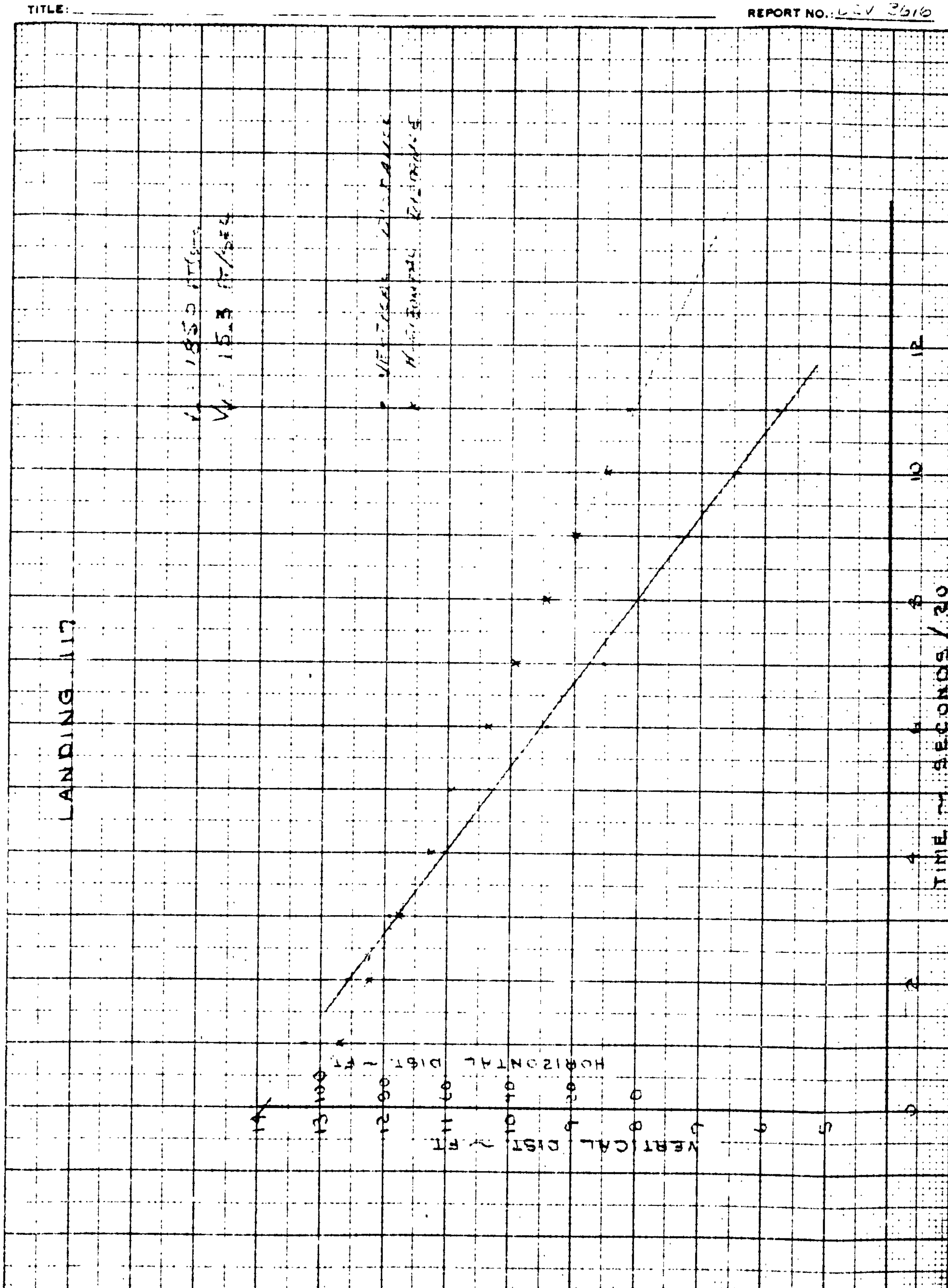
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 88.22

MODEL: A4D-2

REPORT NO.: LSV 3616



K+E ALBANENE

FORM 29 BU (REV 3-64)

PREPARED BY

CHECKED BY

DATE

TITLE

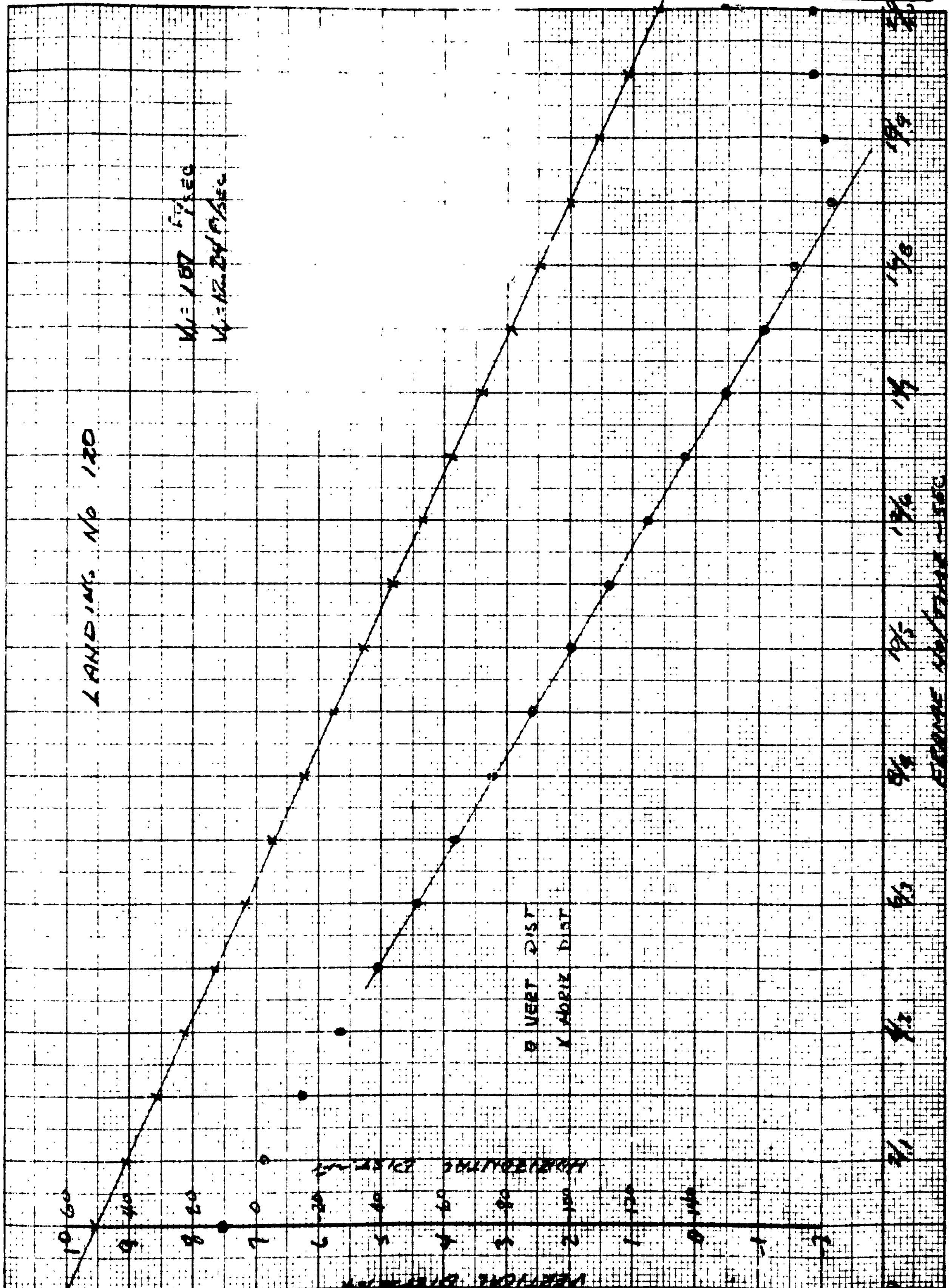
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.3.23

MODEL: A4D-2

REPORT NO.: DEV-3616



174

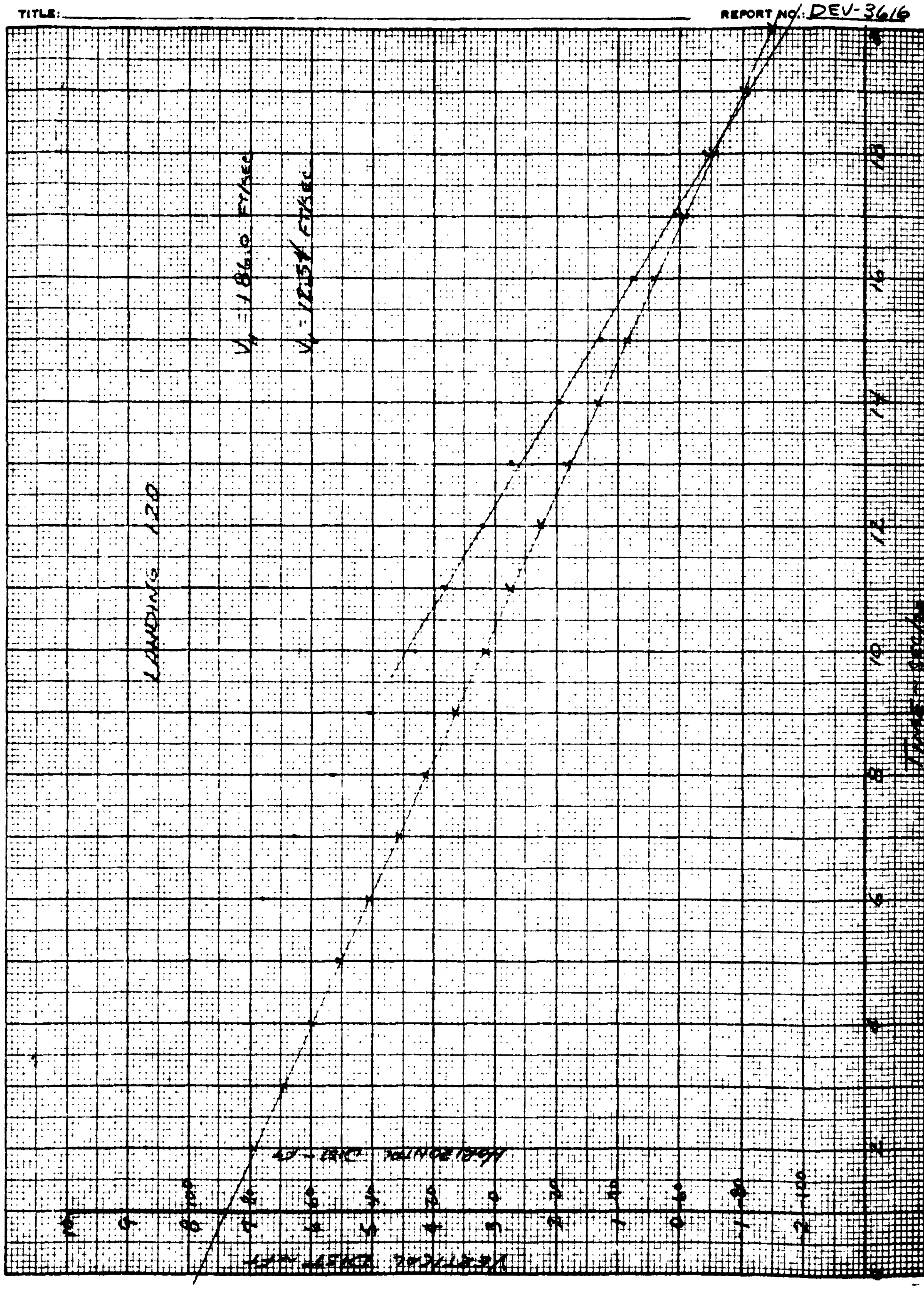
FORM 25 84
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.24
MODEL: A4D-2
REPORT NO.: DEV-3616



K+E ALBANENE

175

FORM 25 85
(REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

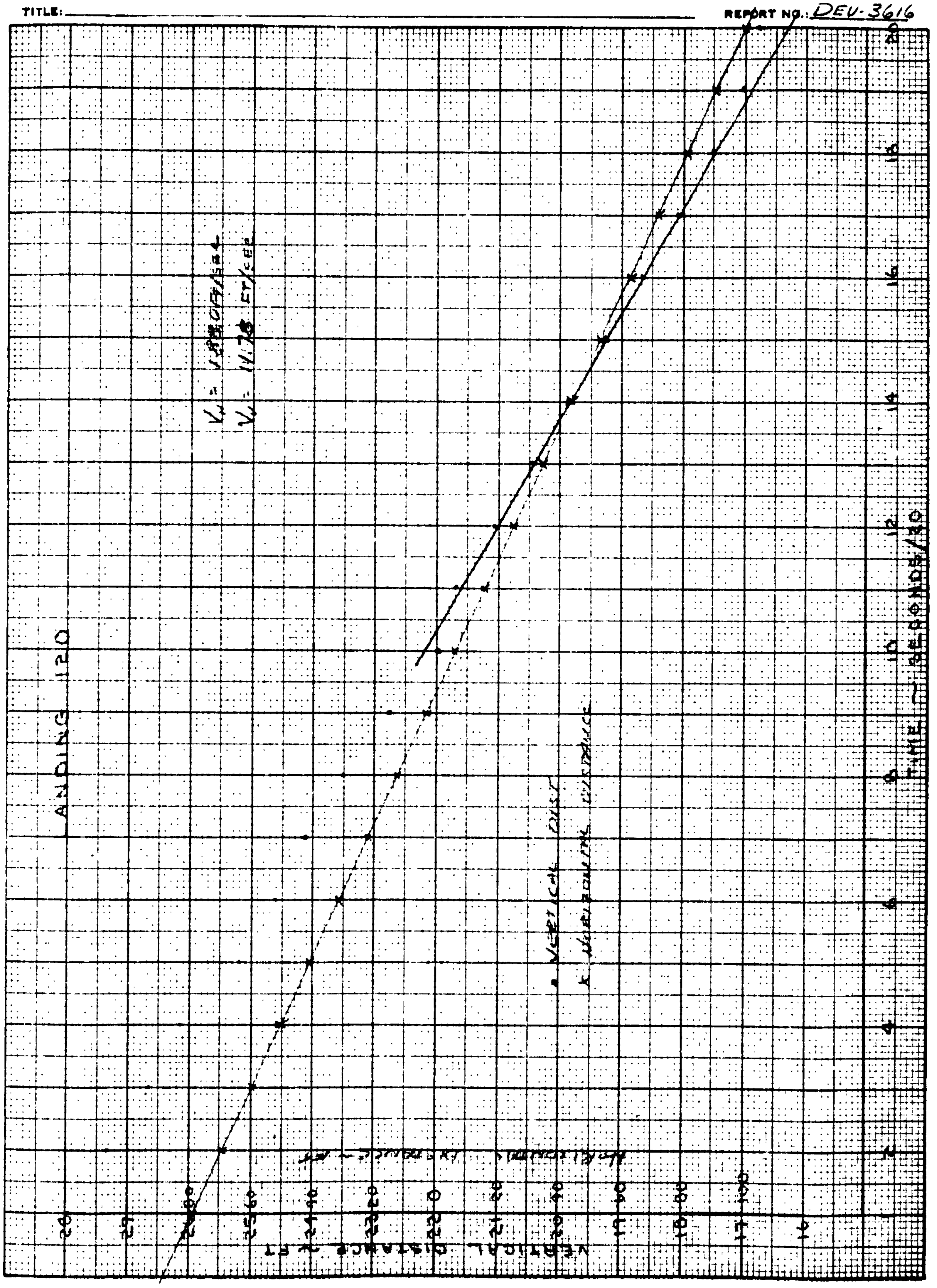
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.25

MODEL: A4D-2

REPORT NO.: DEV-3616



K+E ALBANENE 196L ® TRACING PAPER

176

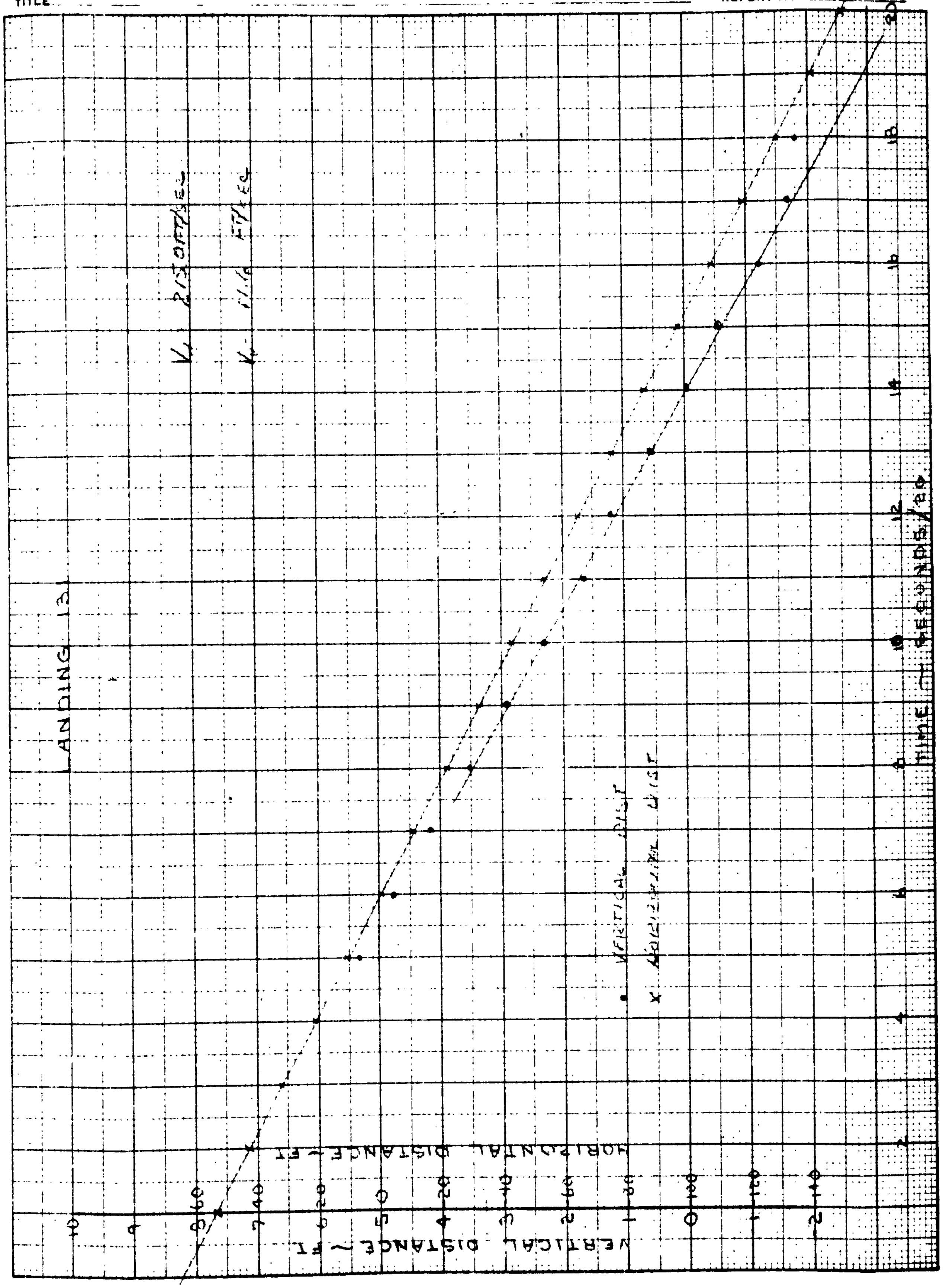
FORM 25 B
(REV. 1-54)

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.26
MODEL A4D-2
REPORT NO. DEV-3616



FORM 25-85 (REV. 3-54) PREPARED BY:

CHECKED BY

DATE

TITLE:

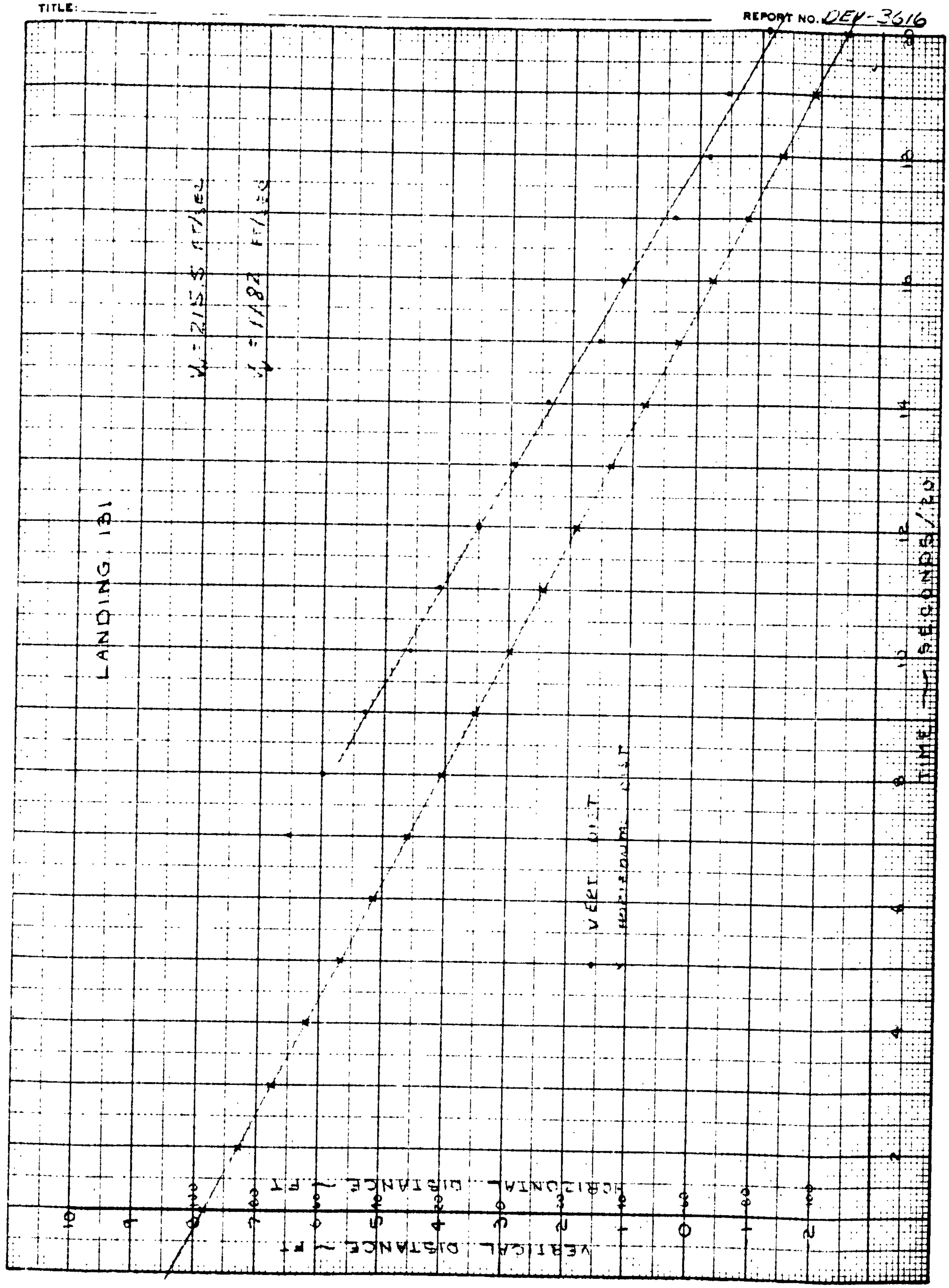
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.27

MODEL A40-2

REPORT NO. DEV-3616



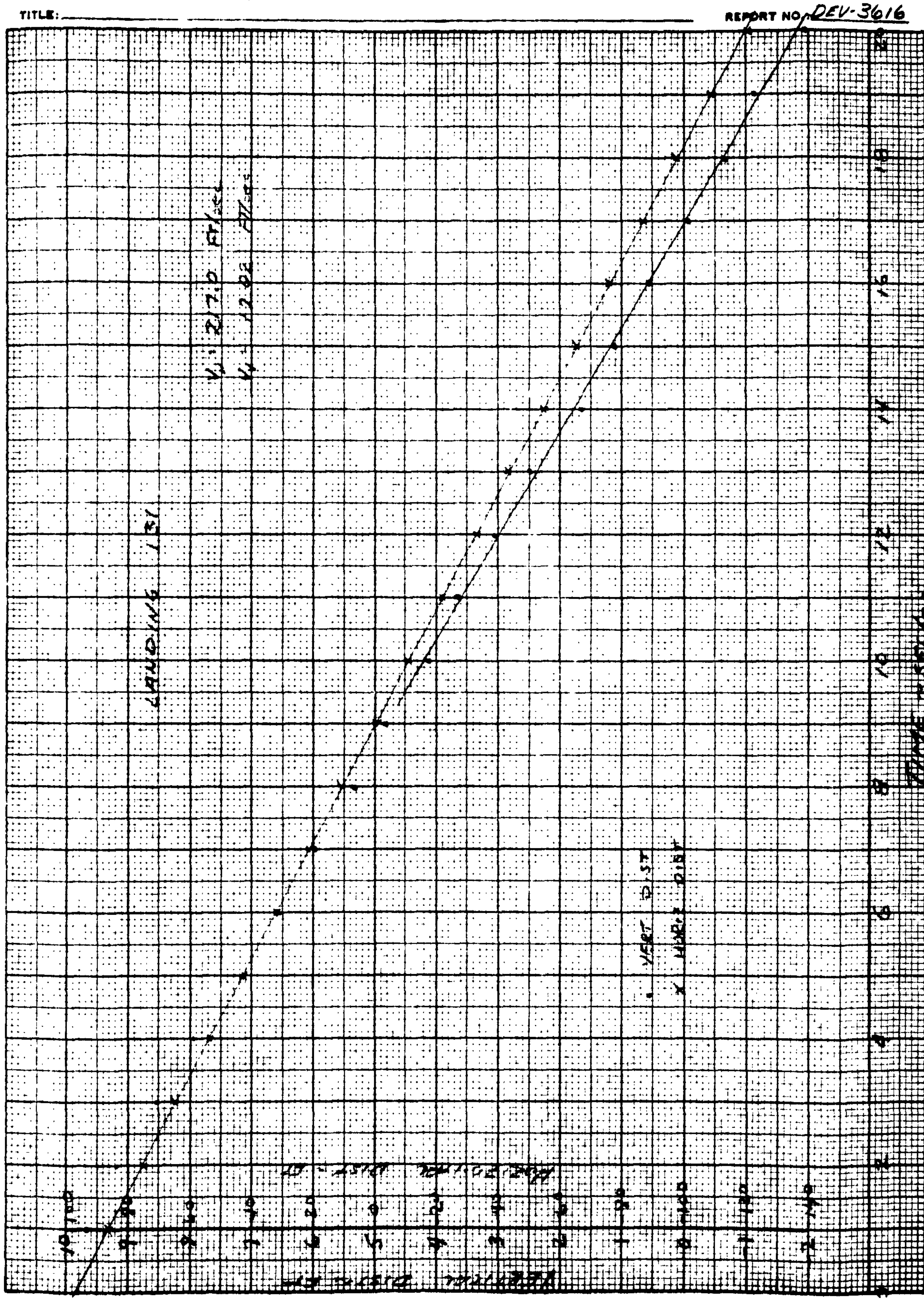
FORM 25 85
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.28
MODEL: A4D-2
REPORT NO. DEV-3616



K+E ALBANENE TOOL

179

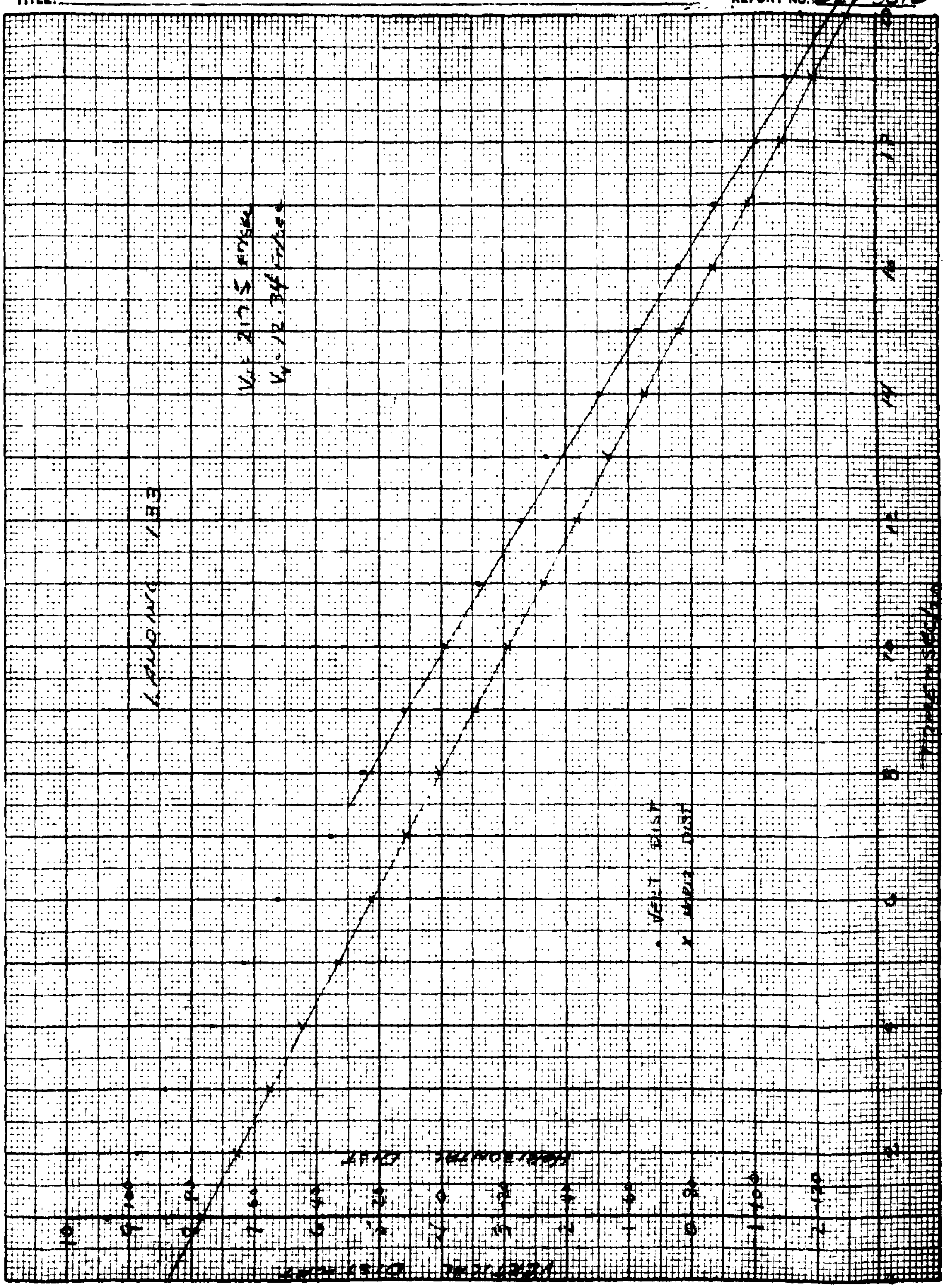
FORM 25 HS
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.29
MODEL: A4D-2
REPORT NO. DEV-3616



K+E ALBANENE 196L TRACING PAPER

031

FORM 26 BS (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

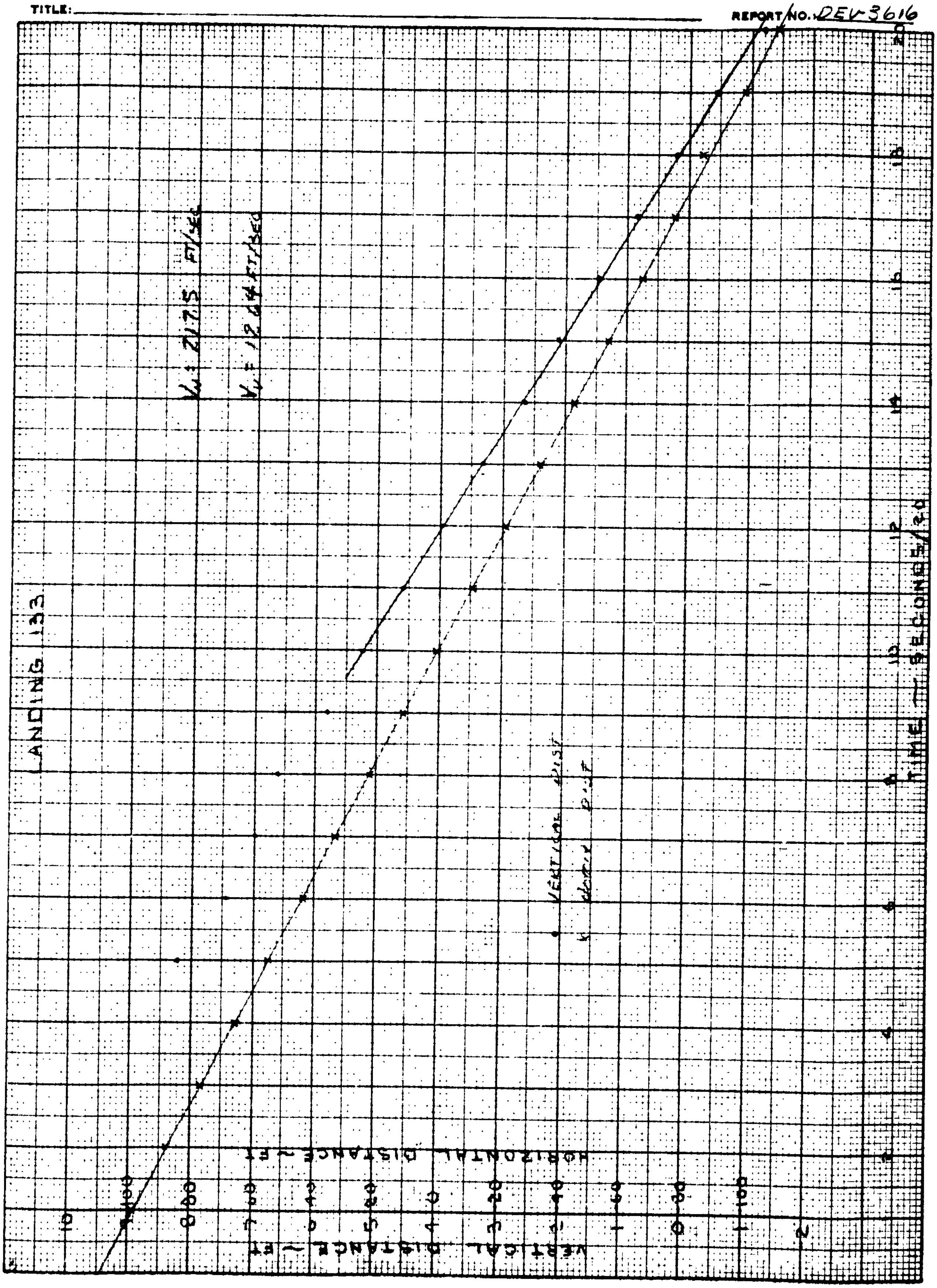
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.30

MODEL: A4D-2

REPORT NO. DEV 3616



151

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY:

CHECKED BY:

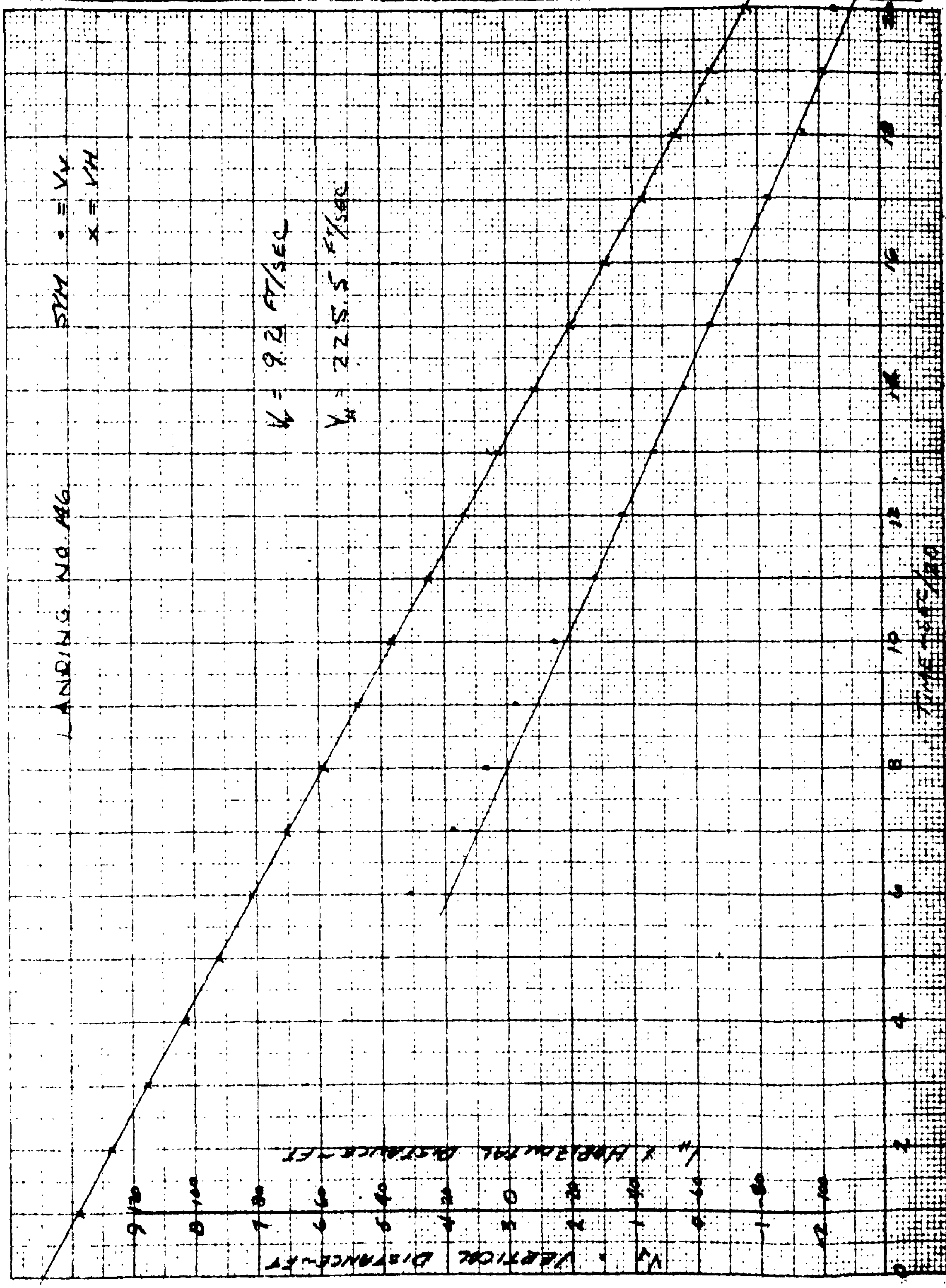
DATE:

TITLE:

DIVISION

MODEL: A4D-2 #089

REPORT NO.: DEV-3616



182

FORM 20 83 (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

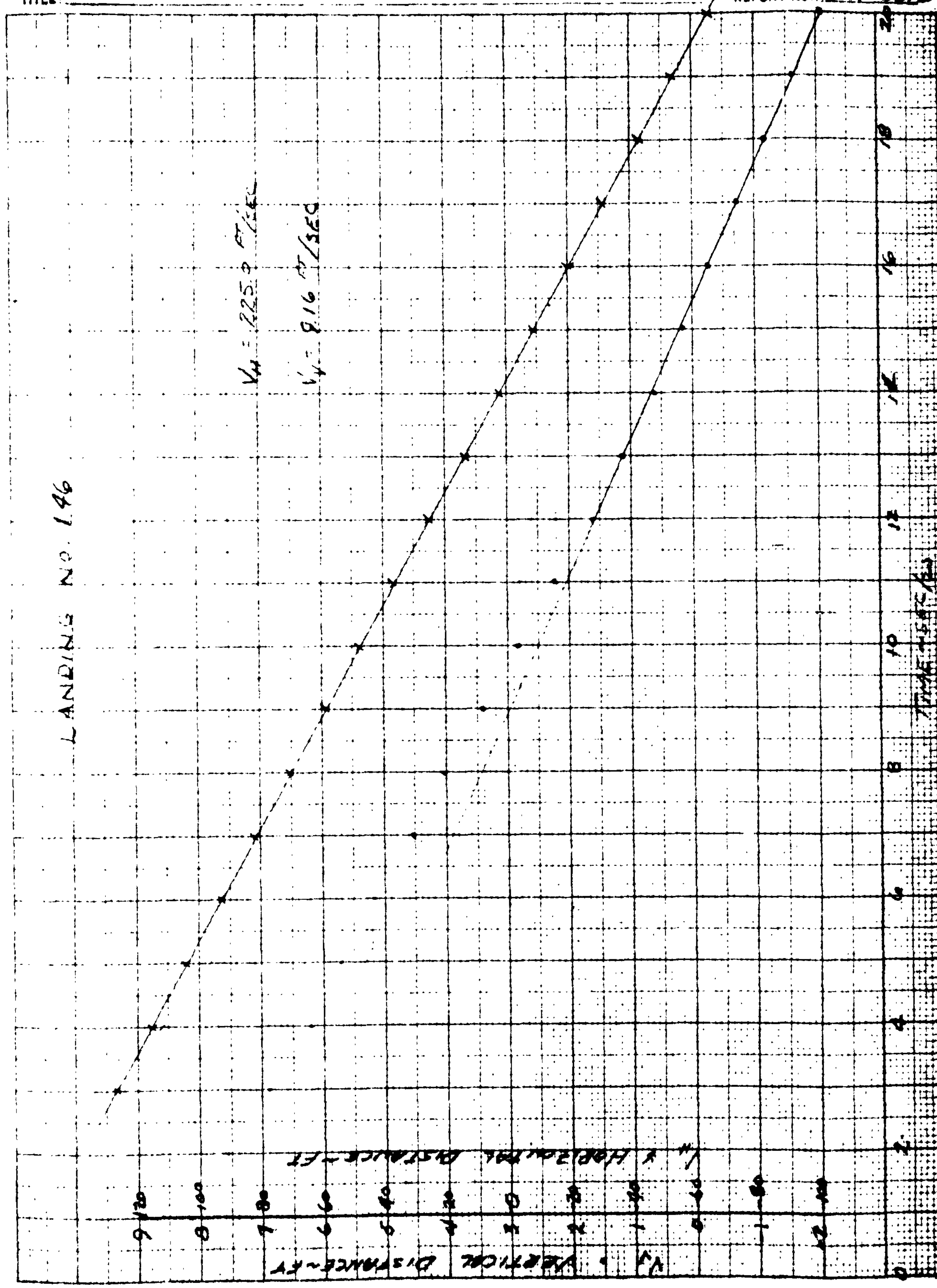
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.32

MODEL: A4D-2 #089

REPORT NO.: DEV-3616



K+E ALBANENE 105L

183

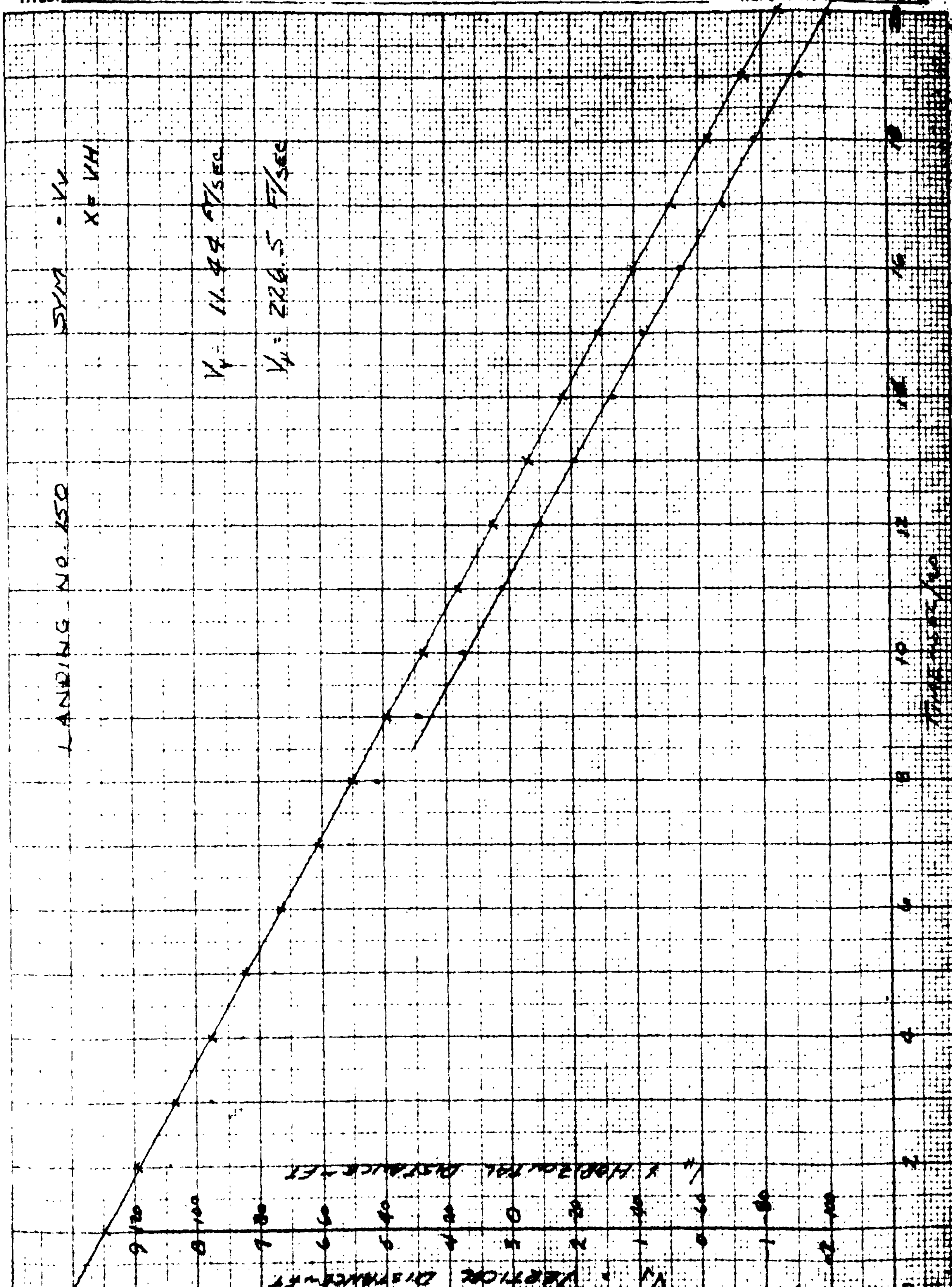
PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

MODEL: A4D-2 #089

REPORT NO. DEV-3616



K+E

184

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY:

CHECKED BY:

DATE:

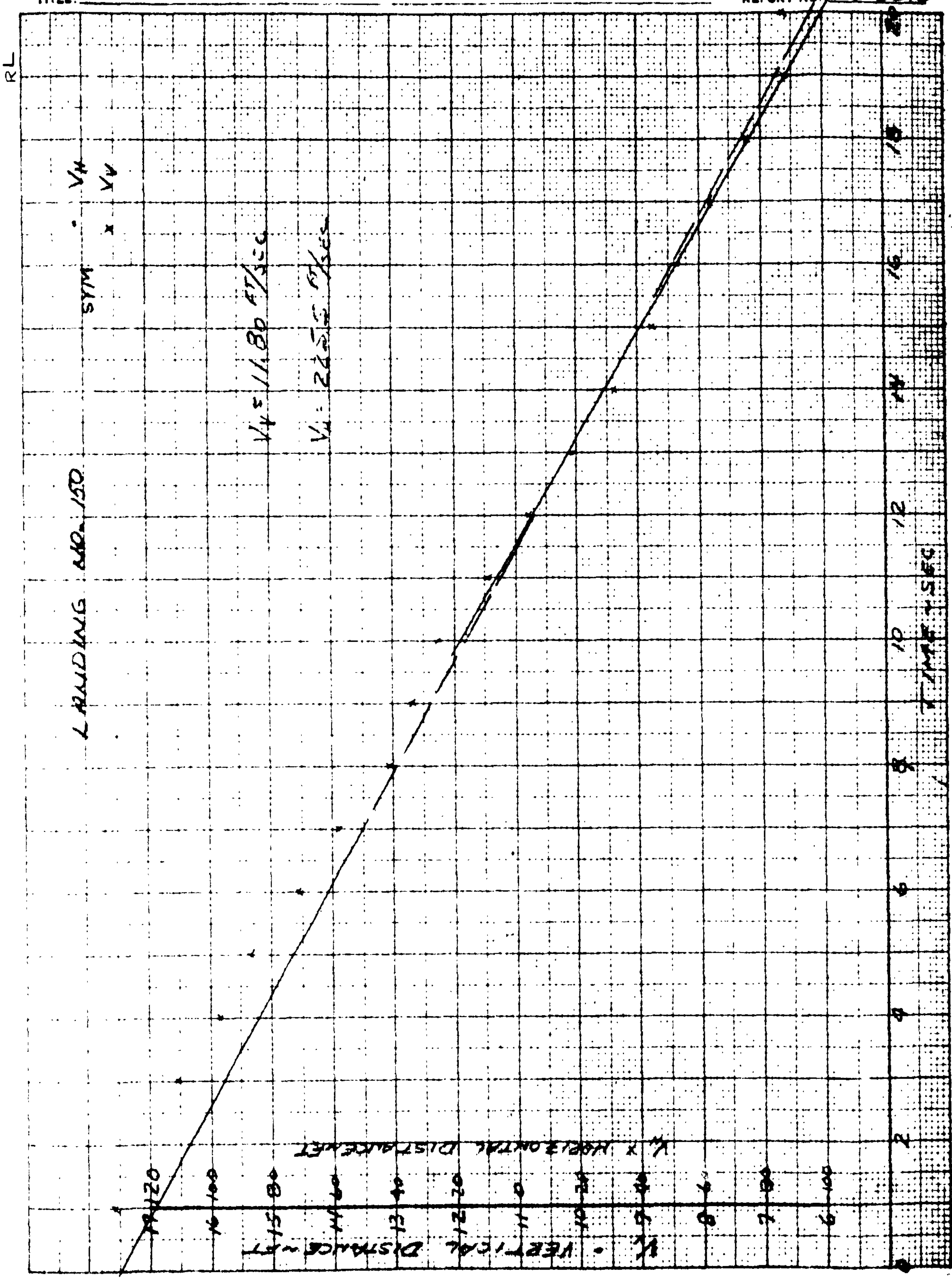
TITLE:

DIVISION

PAGE: 8.8.34

MODEL: A4D-2

REPORT NO. DEV-3616

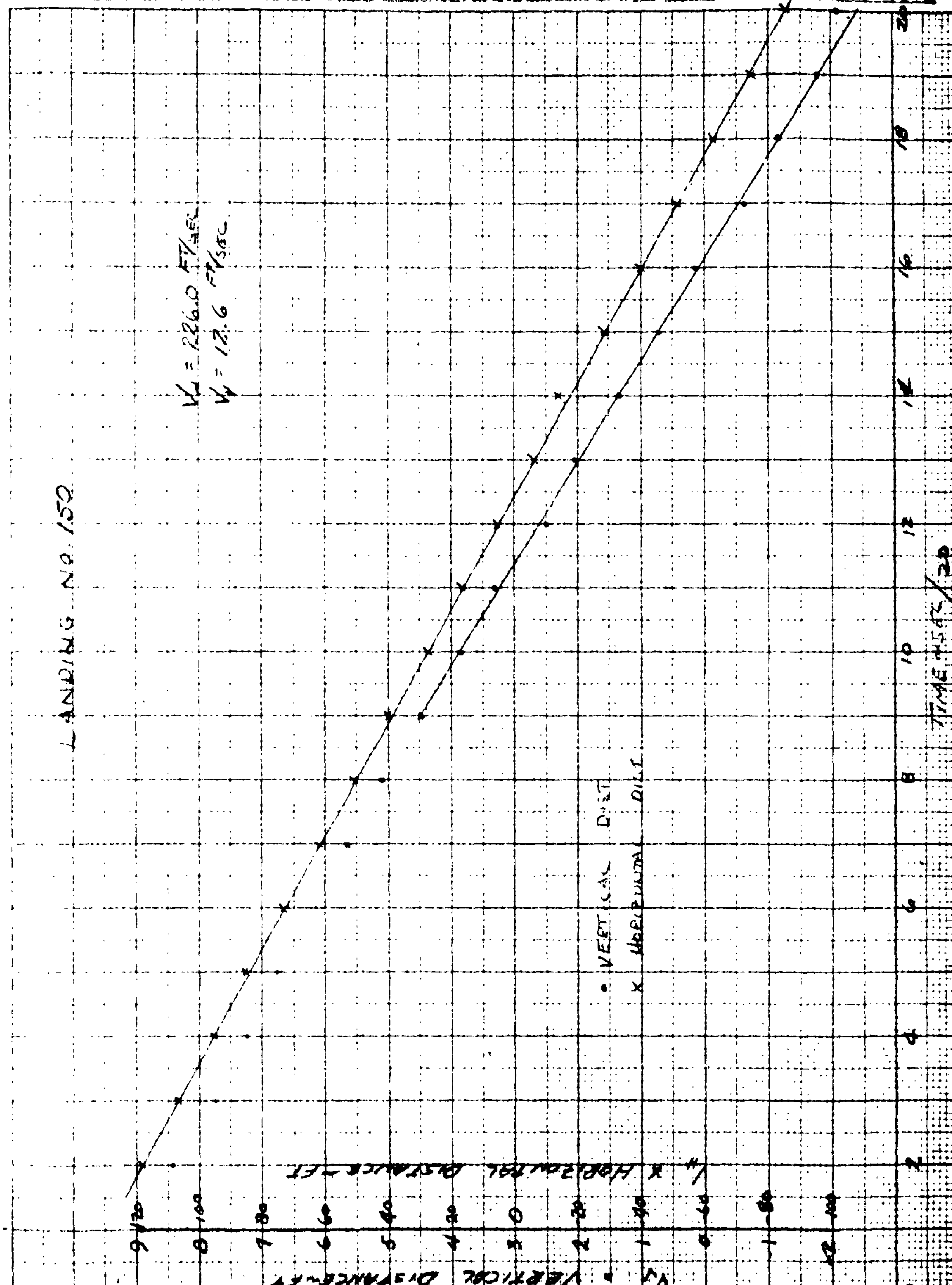


PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: B.B. 35
MODEL: A40-2 #089
REPORT NO. DEV-3616



K-E

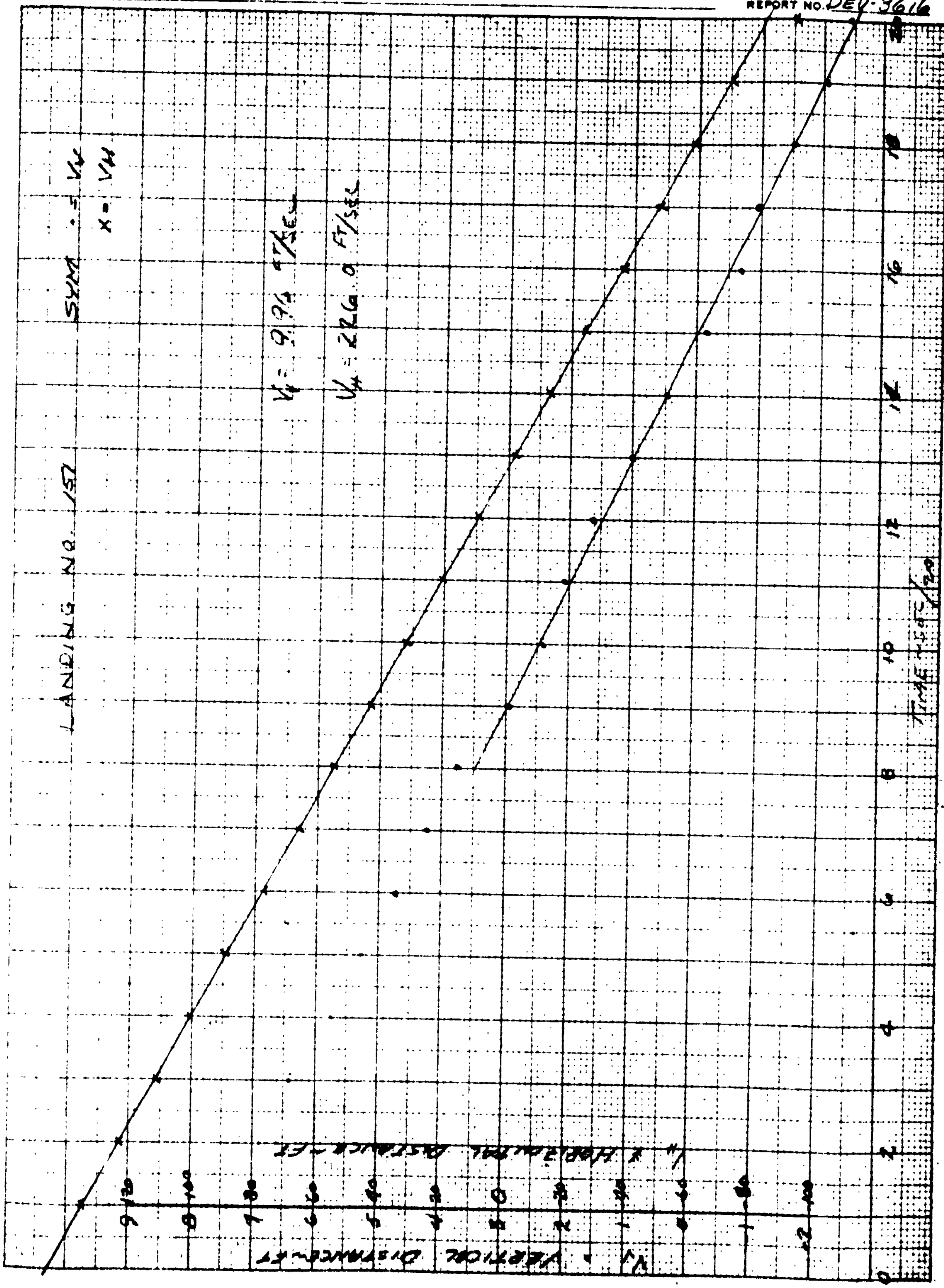
981

FORM 20-56 (REV. 3-54) PREPARED BY: [illegible]
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.36
MODEL: A40-2 #089
REPORT NO. DEV-3616



K+E ALBANENE

187

PREPARED BY: [illegible]

CHECKED BY:

DATE:

TITLE:

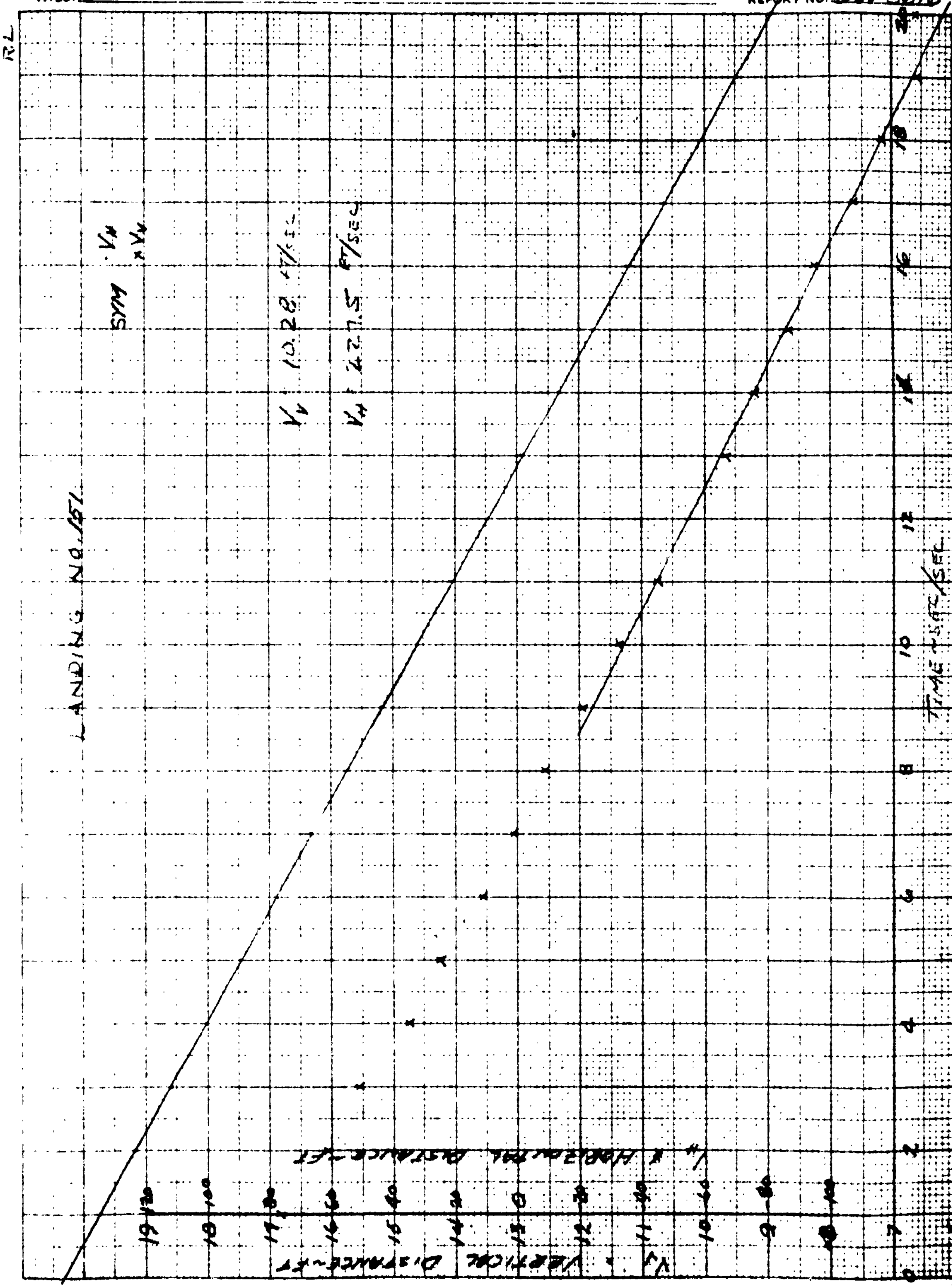
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.37

MODEL: A40-2 #089

REPORT NO. DEV-3616



K-E ALBANENE

188

FORM 20 E4 (REV. 8-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

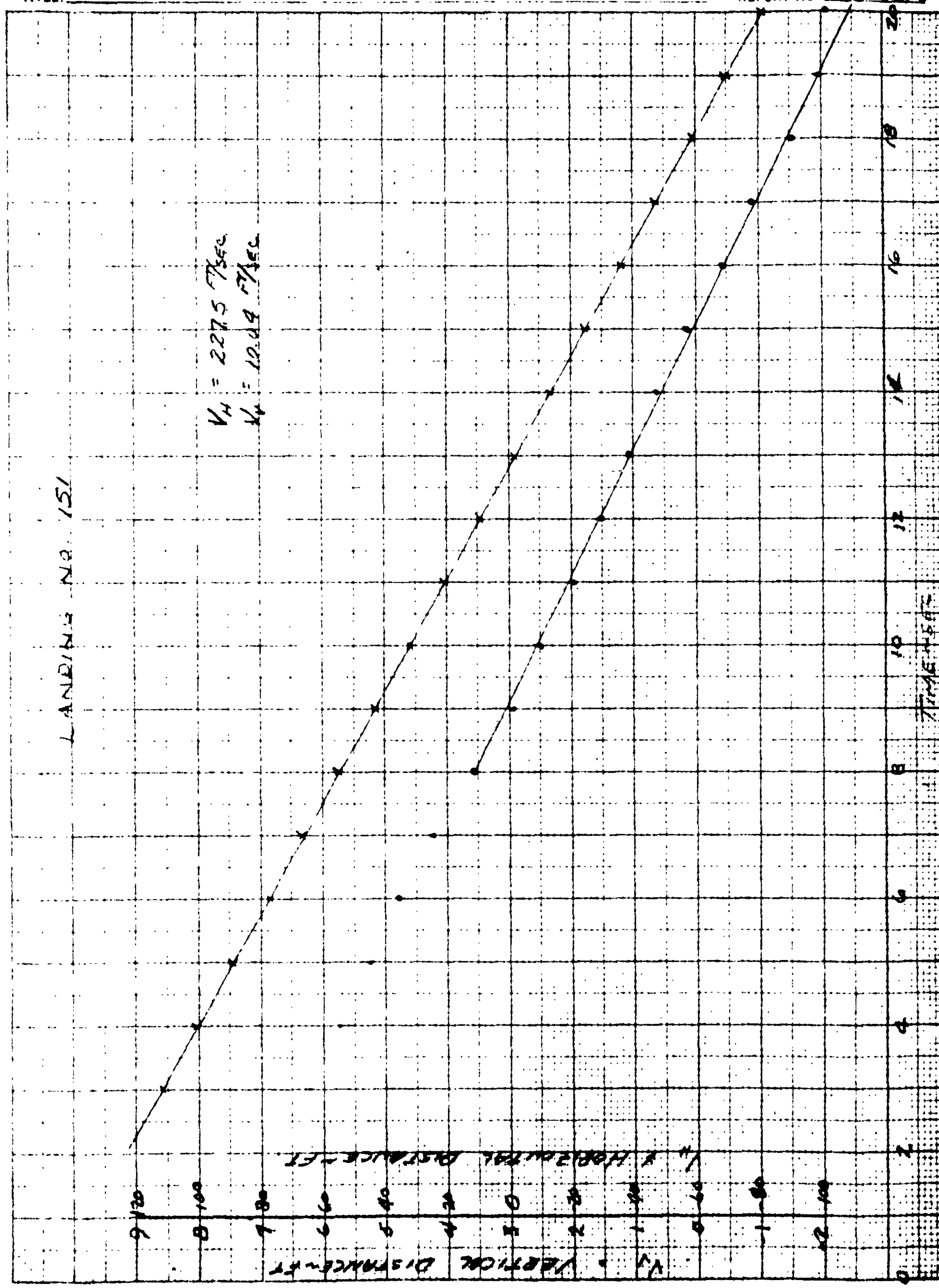
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.38

MODEL: A4D-2 #089

REPORT NO. DEV-3616



681

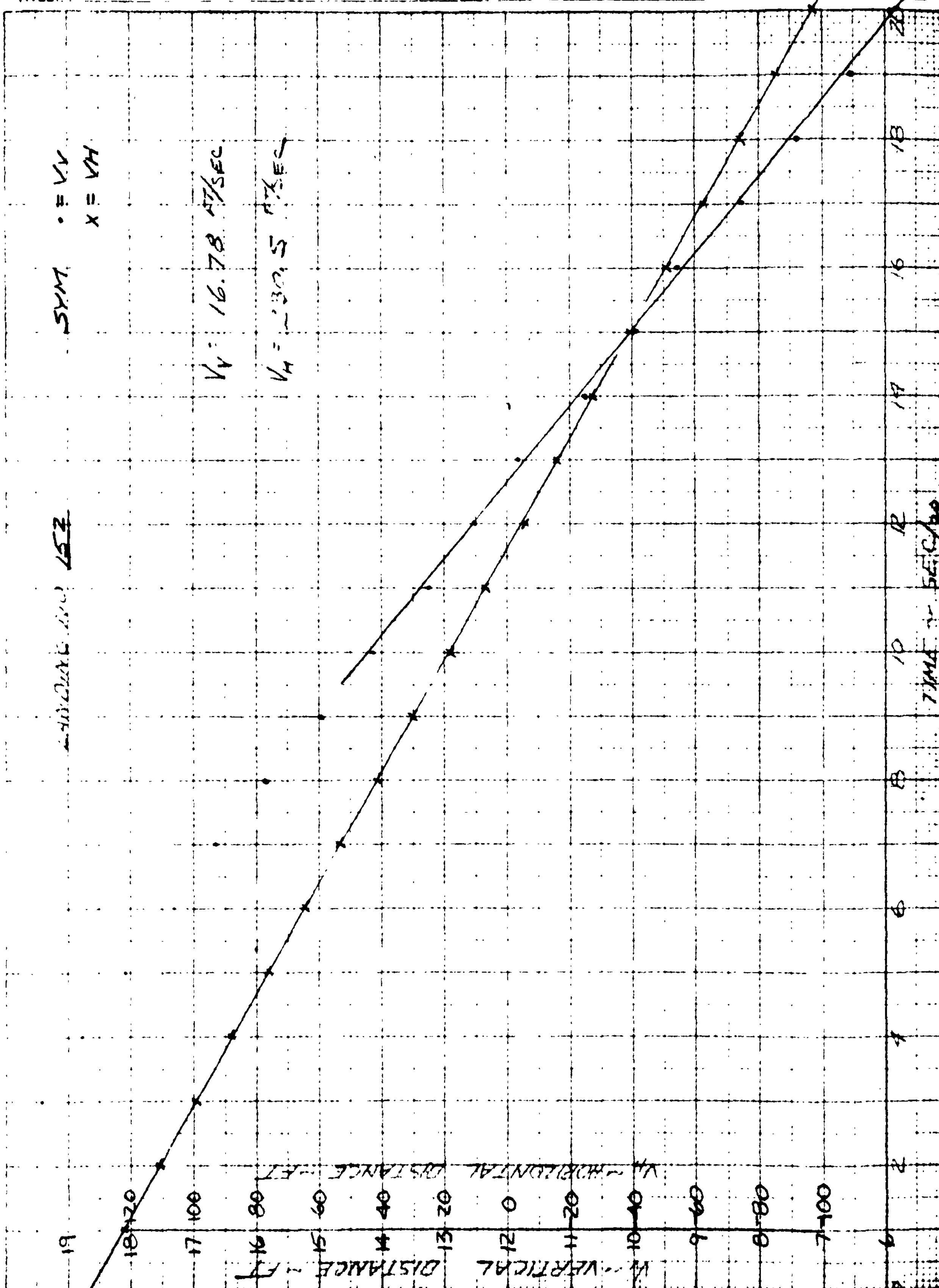
FORM 20 DS (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.39
MODEL: A4D-2
REPORT NO. DEV-3616



K-E ALBANENE

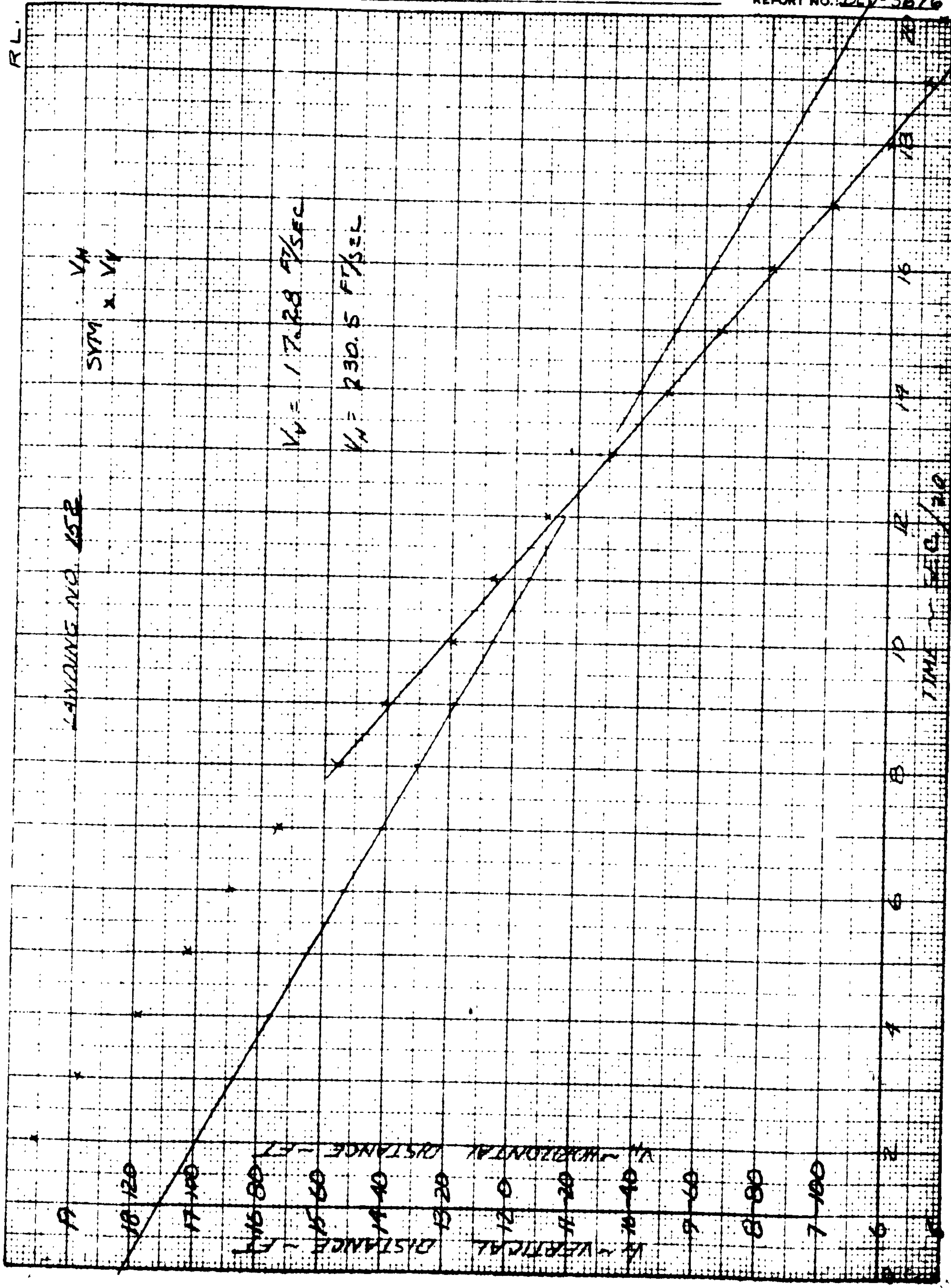
190

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY: J. S.
CHECKED BY:
DATE:
TITLE:

DIVISION

PAGE: 8.8.40
MODEL: A4D-2
REPORT NO. DEV-3616



K+E ALBANENE

161

FORM 25 (REV. 3-54)

PREPARED BY:

CHECKED BY

DATE:

TITLE

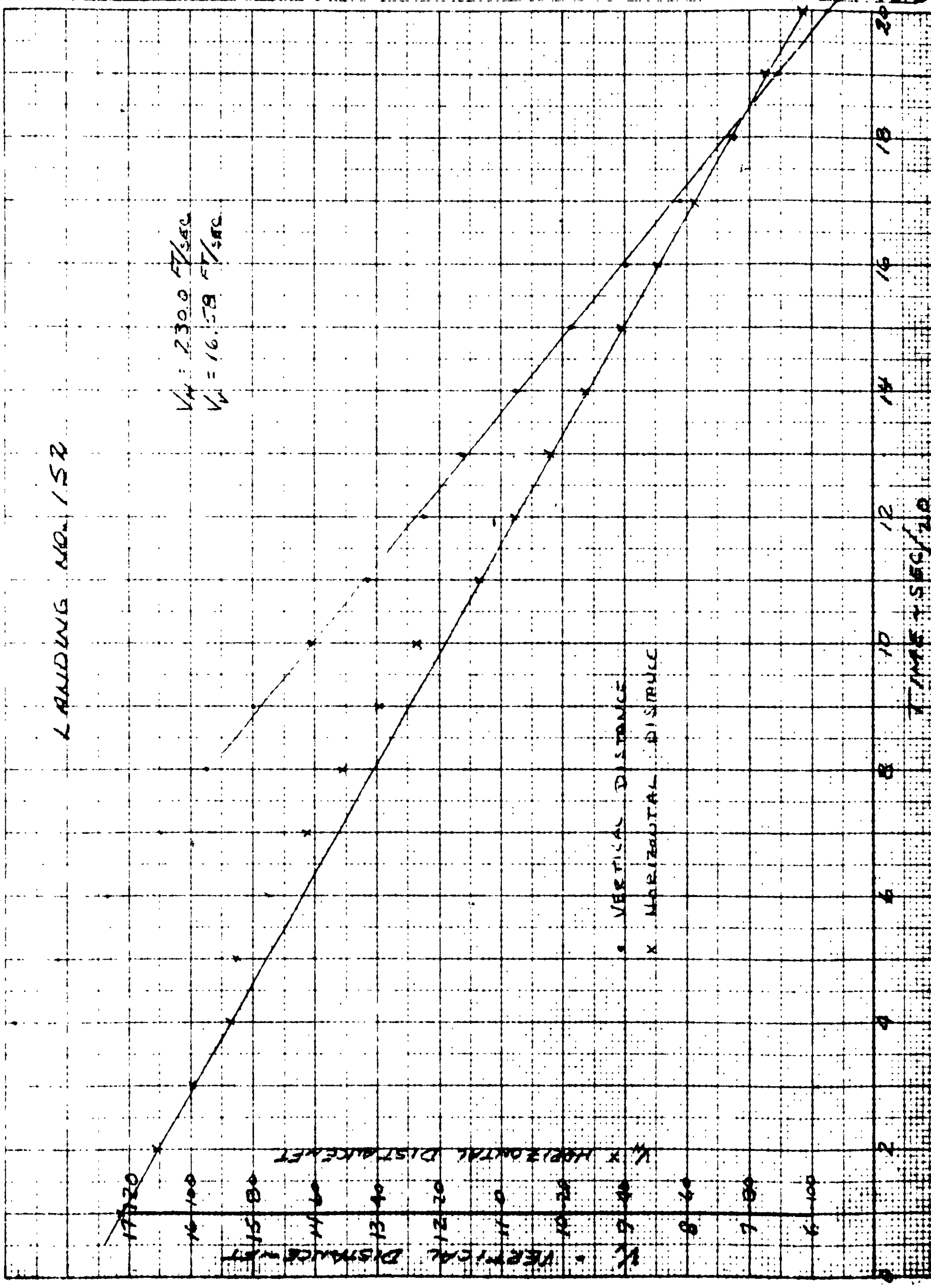
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.41

MODEL: A4D-2

REPORT NO DEV-3616



K+E

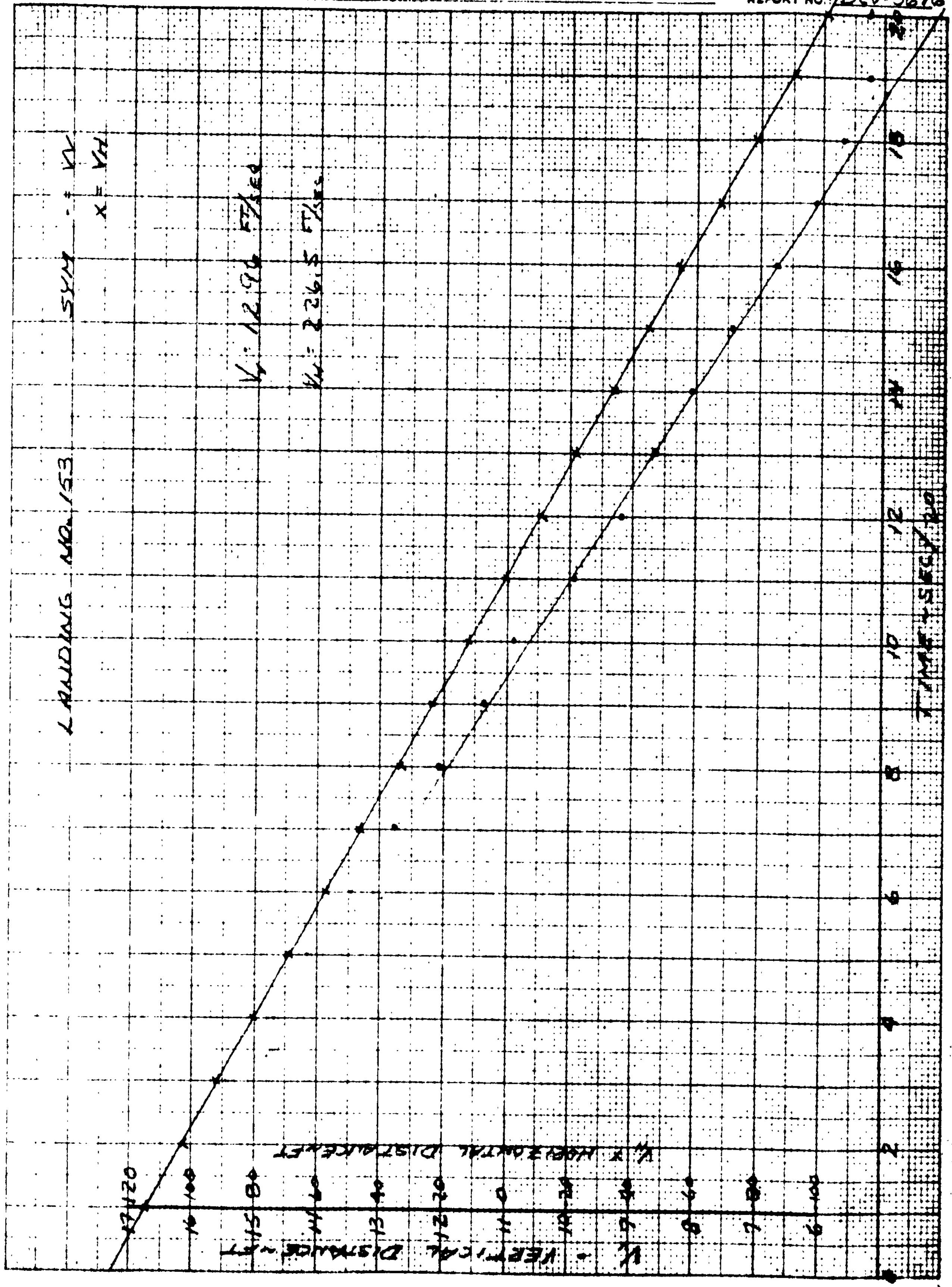
FORM 20 86 (REV. 3-54)

PREPARED BY: J.L.
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.92
MODEL: A4D-2
REPORT NO.: DEV-3616

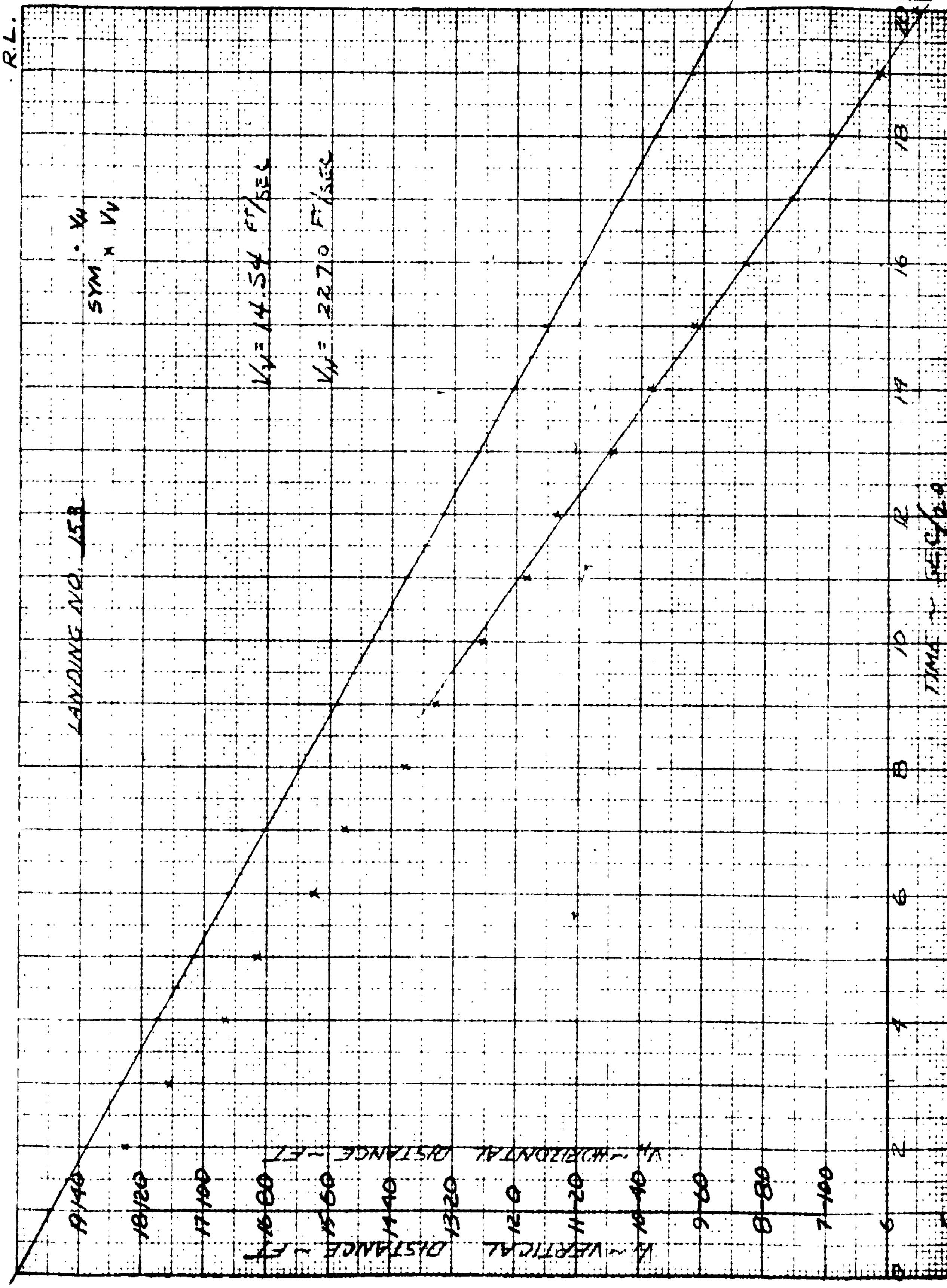


PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.B.43
MODEL: A4D-2
REPORT NO. DEU-3616



K+E ALBANENE

194

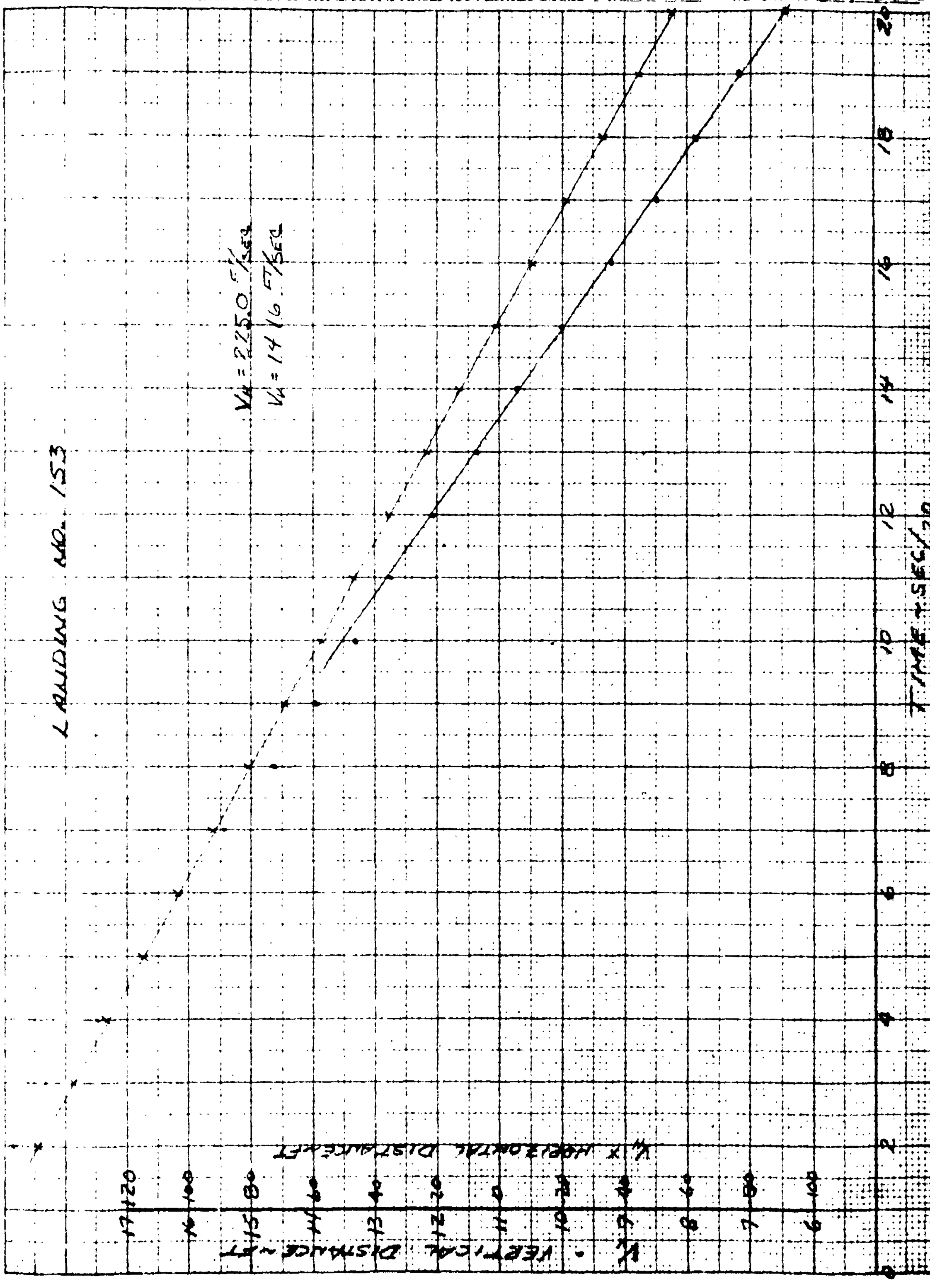
FORM 20-98 (REV. 8-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.44
MODEL: A4D-2
REPORT NO DEV-3616



195

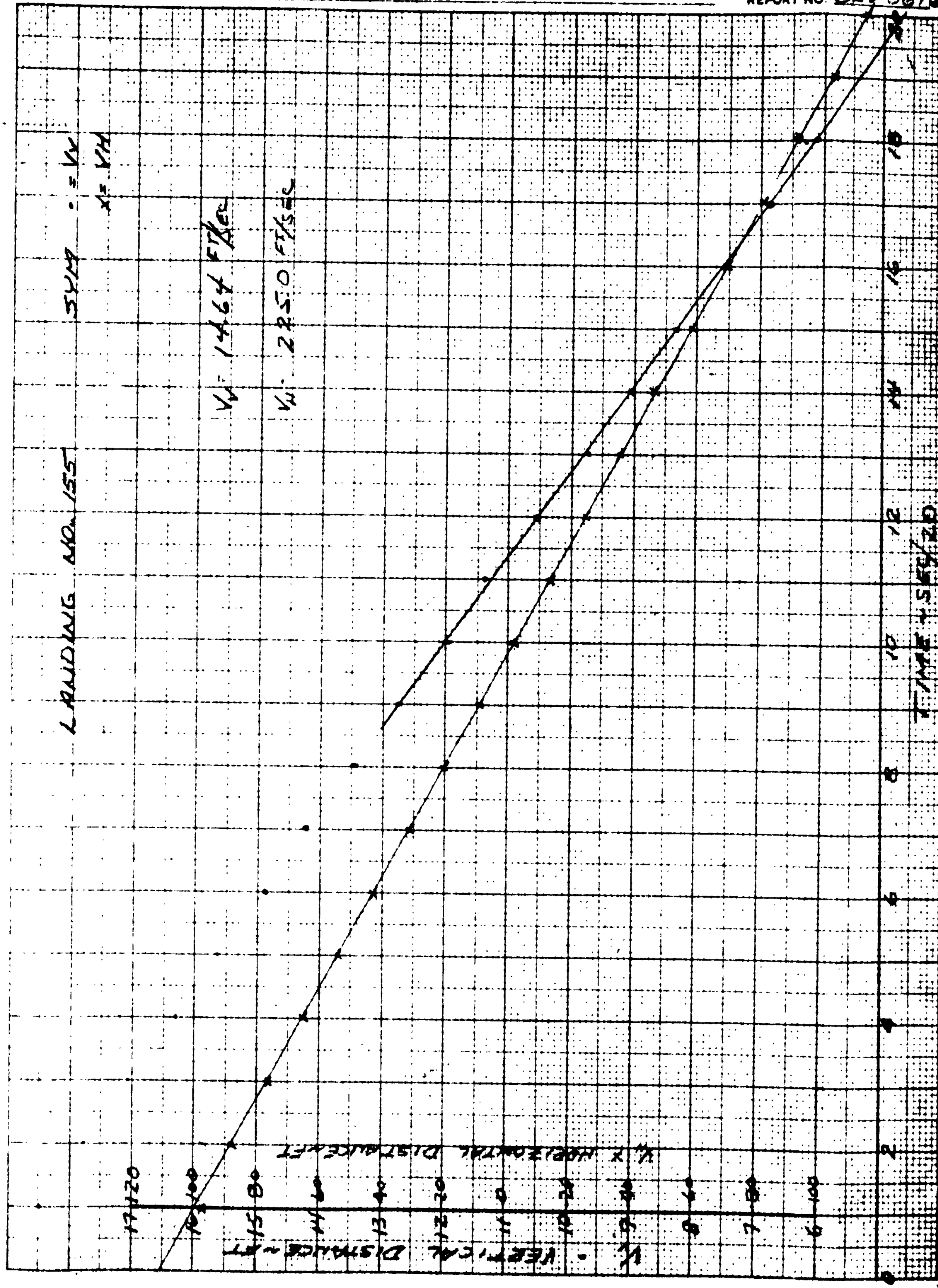
K+E ALBANENE 196L TRACING PAPER

FORM 20 95 (REV. 5-54) PREPARED BY: | DOUGLAS AIRCRAFT COMPANY, INC. | PAGE: 8.8.45

CHECKED BY: | MODEL: A4D-2

DATE: | DIVISION

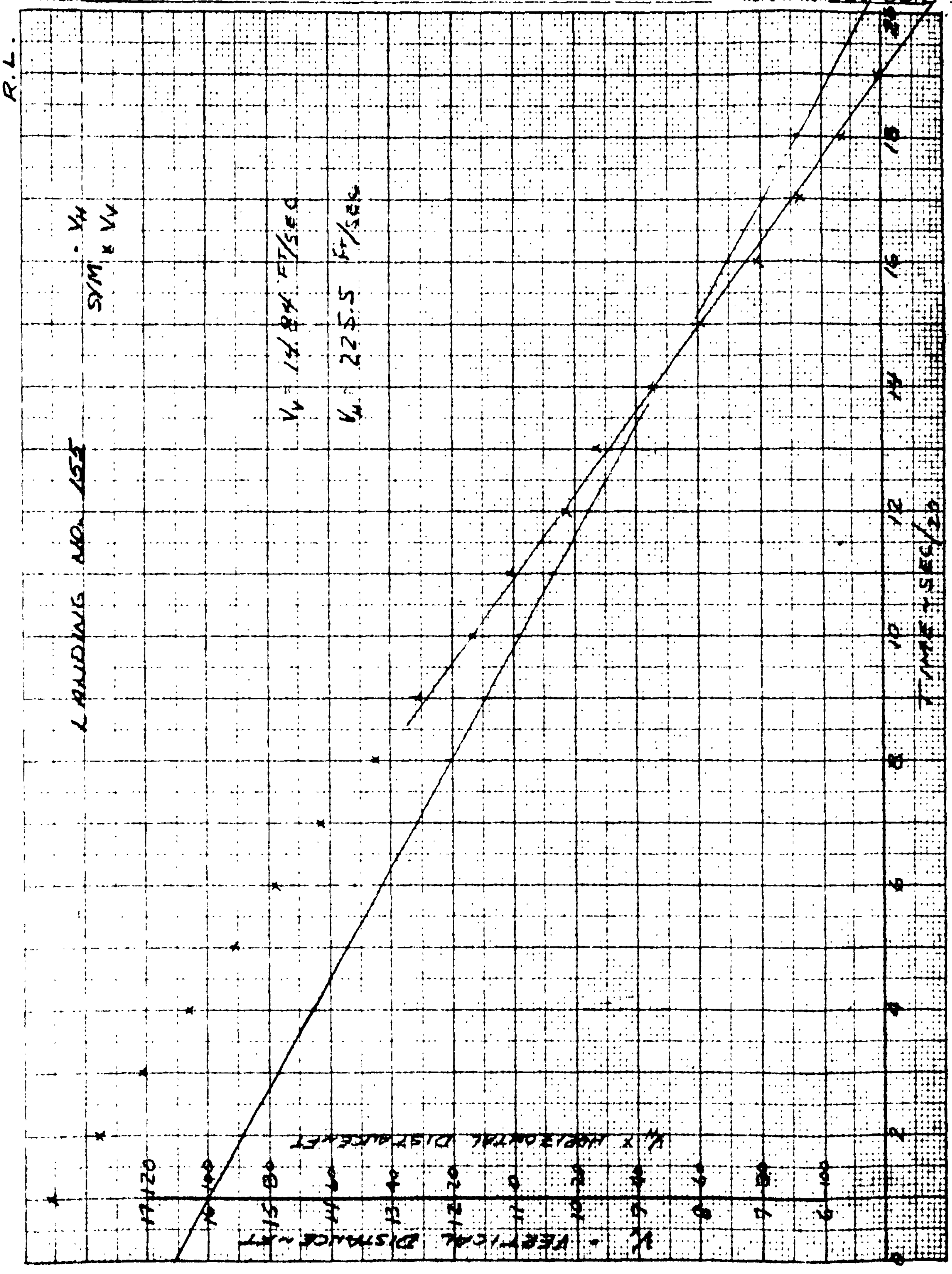
TITLE: | REPORT NO. DEV-3616



K-E ALBANENE

196

PREPARED BY: | DOUGLAS AIRCRAFT COMPANY, INC. | PAGE: 8.5.46
CHECKED BY: | DIVISION | MODEL: A4D-2
DATE: | | REPORT NO. DEV-3616
TITLE:



FORM 20 ... (REV. 8-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

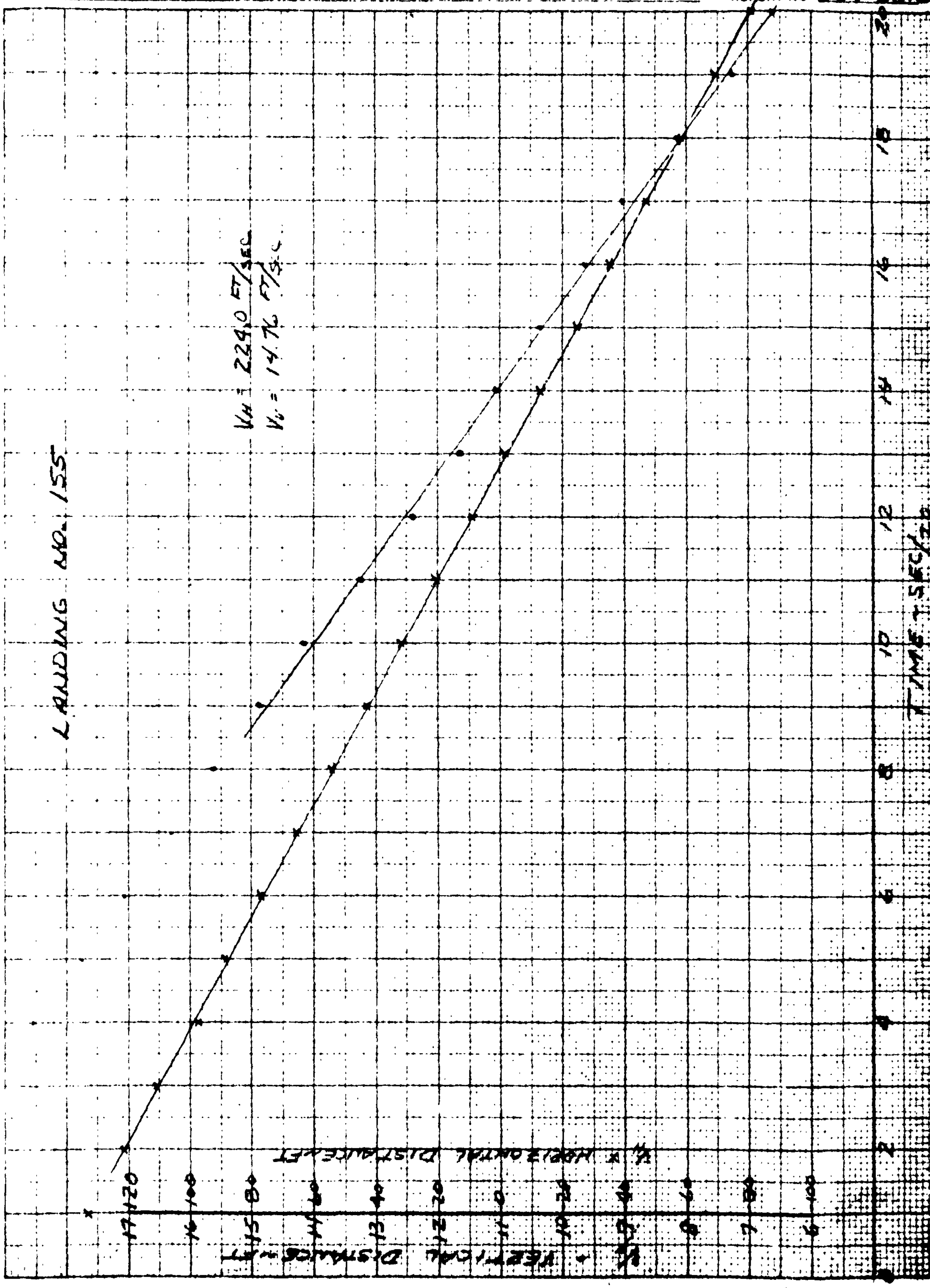
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.47

MODEL A4D-2

REPORT NO DEV-3616



K+E ALBANENE 196L TRACING PAPER

198

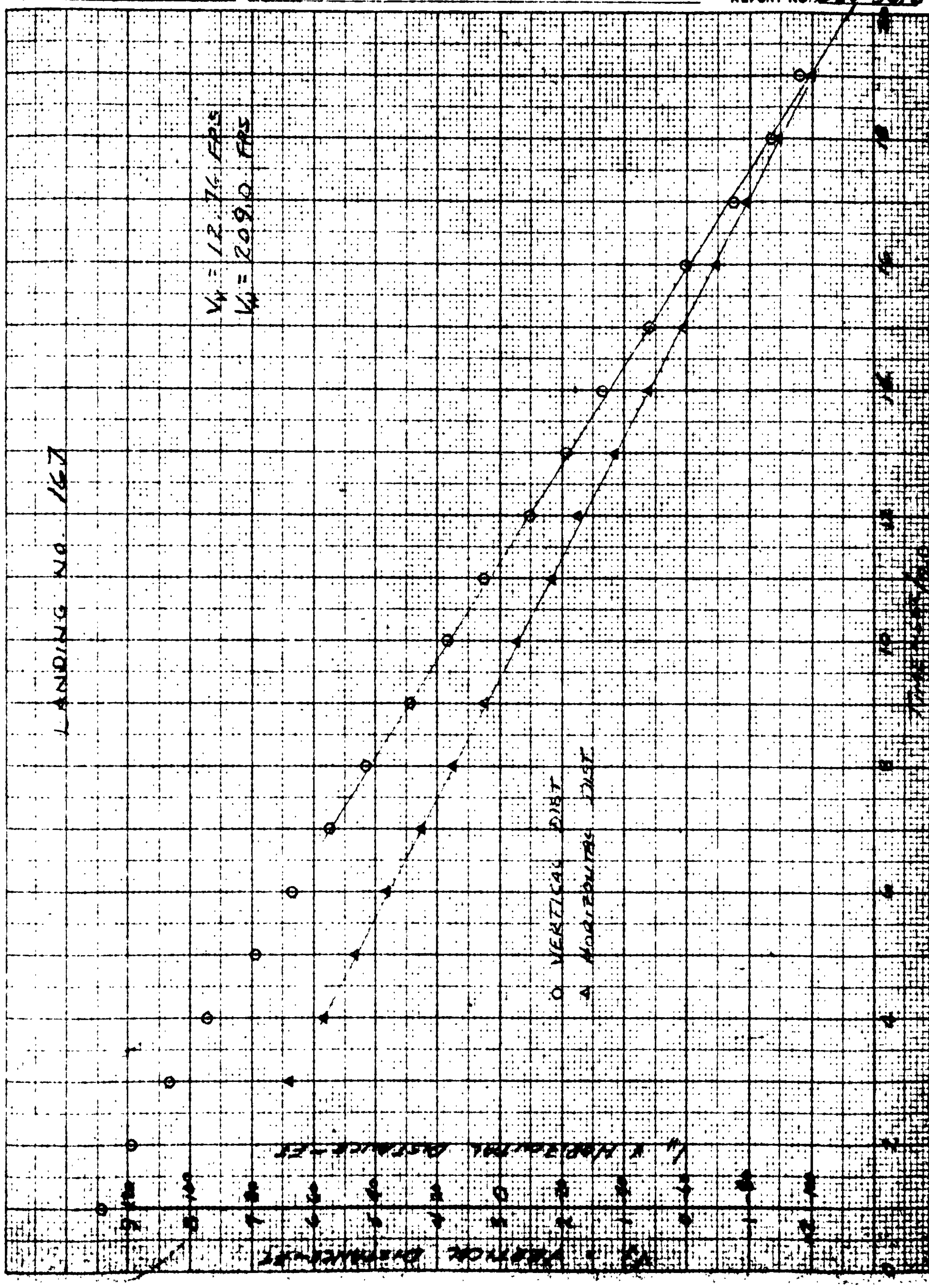
FORM 25 BB (REV. 8-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.B.48
MODEL: A4D-2 #089
REPORT NO. DEV-3616



K+E ALBANENE TRACING PAPER

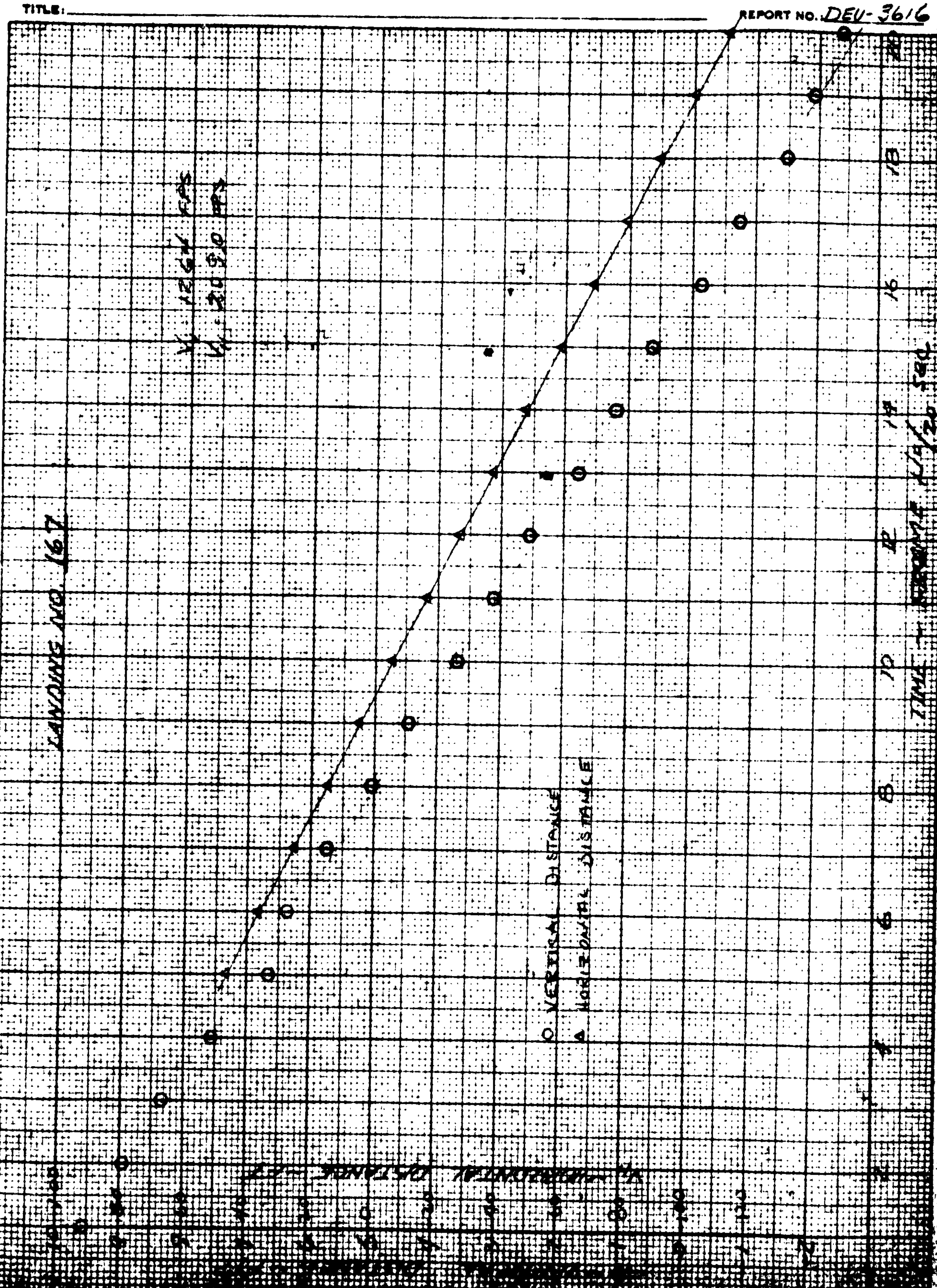
199

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 88.49
MODEL: A4D-2
REPORT NO. DEV-3616

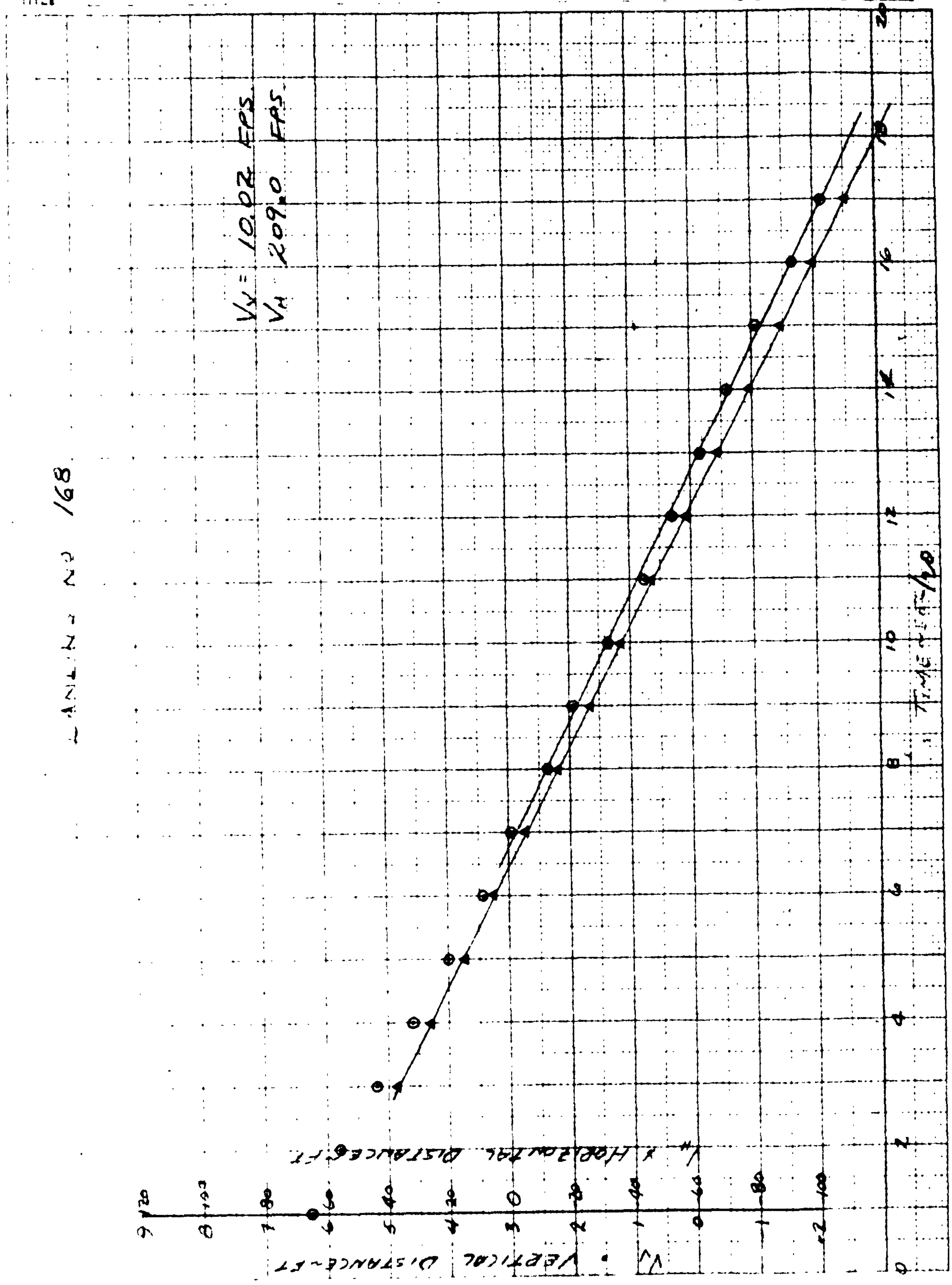


PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.50
MODEL A4D-2 #037
REPORT NO DEV-3616



102

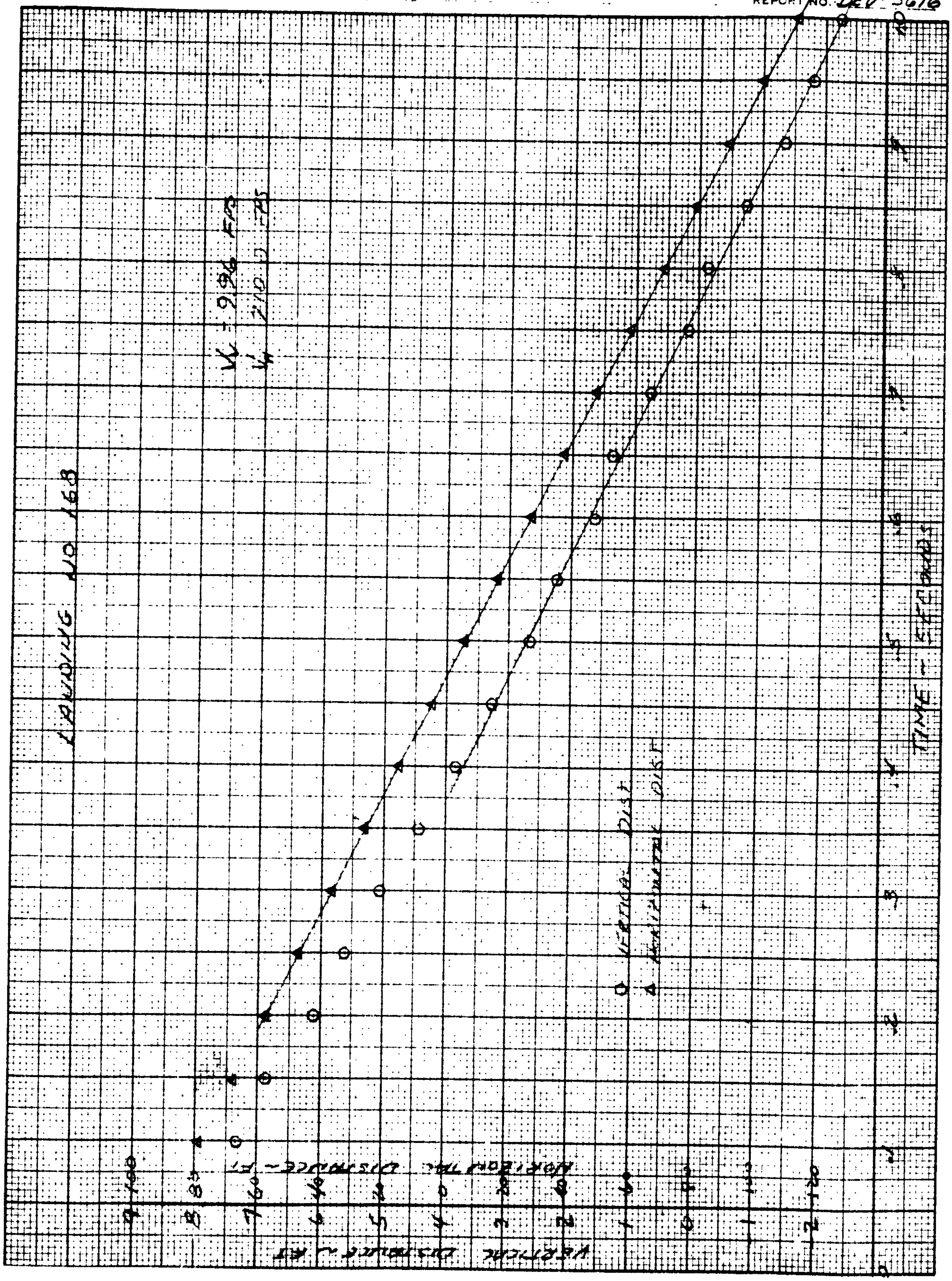
FORM 25 BS
(REV. 3-54)

PREPARED BY:
CHECKED BY
DATE
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.51
MODEL A4D-2
REPORT NO. DEV-3616



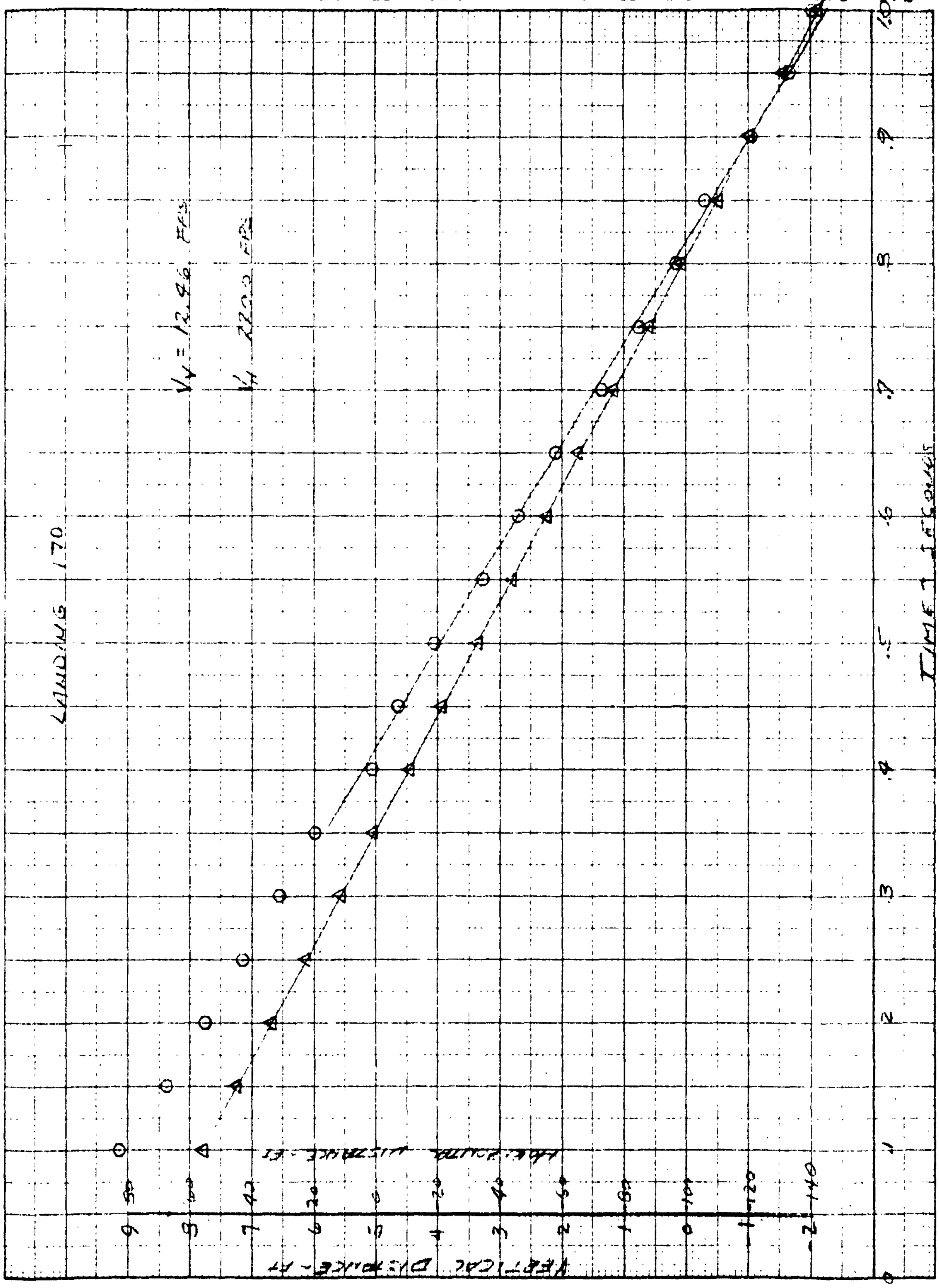
202

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.52
MODEL A4D-2
REPORT NO. DEV-3616

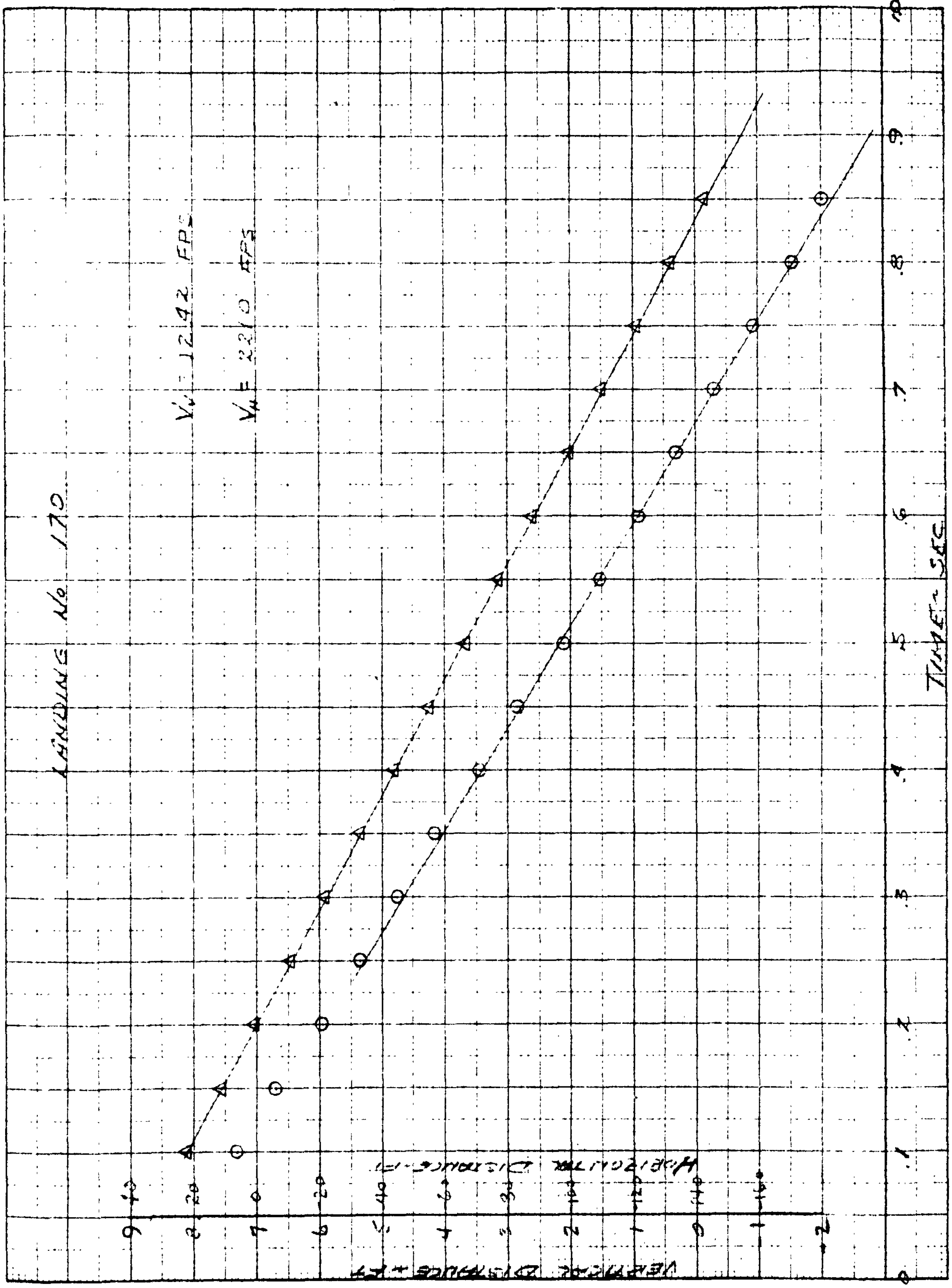


PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.53
MODEL A4D-2
REPORT NO. DEV-3616



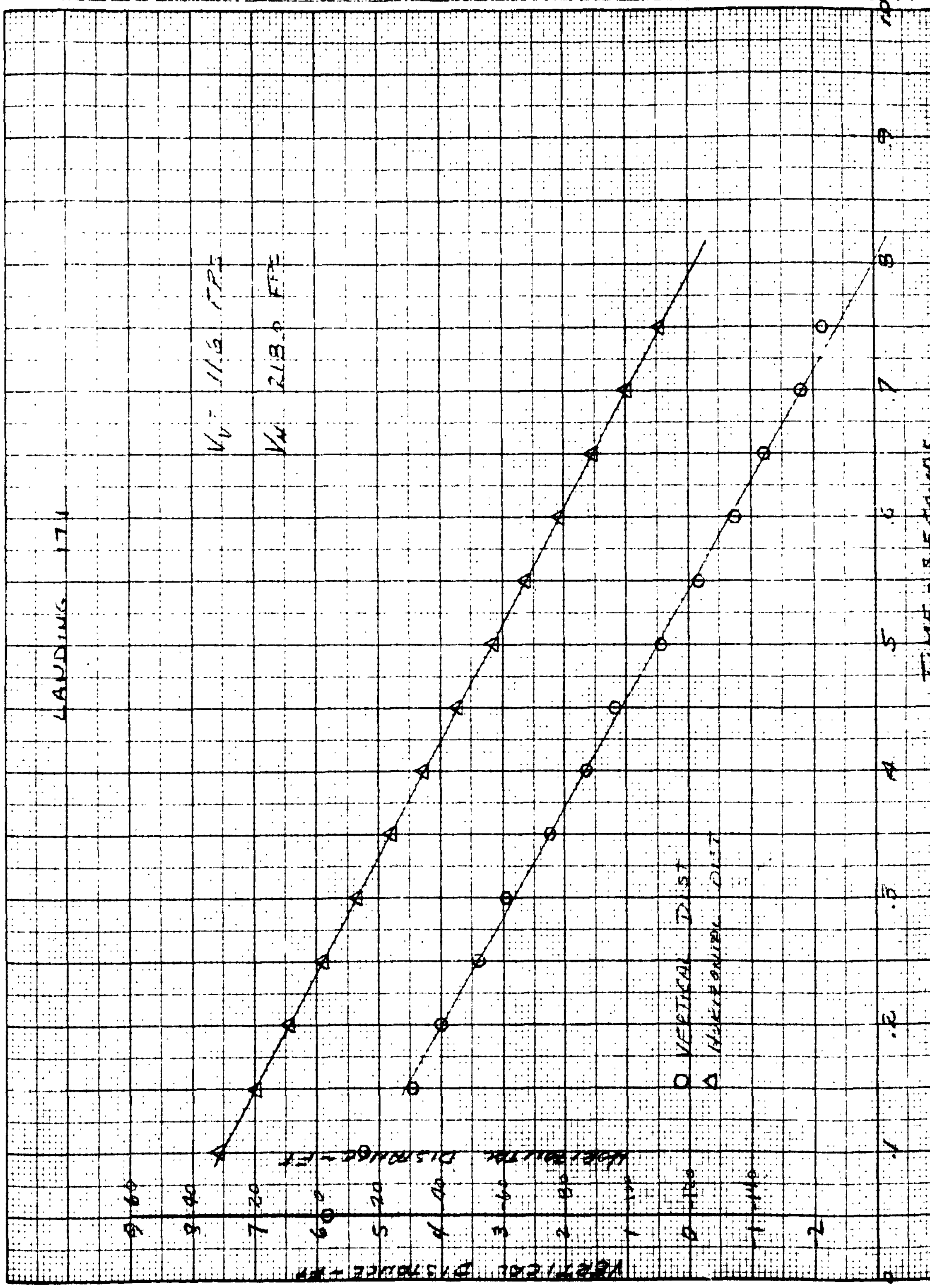
FORM 25-105
(REV. 1-54)

PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.54
MODEL A4D-2
REPORT NO. DEV-3616



K•E ALBANENE 195L

502

FORM 20-85 (REV 9-54)

PREPARED BY

CHECKED BY

DATE

TITLE

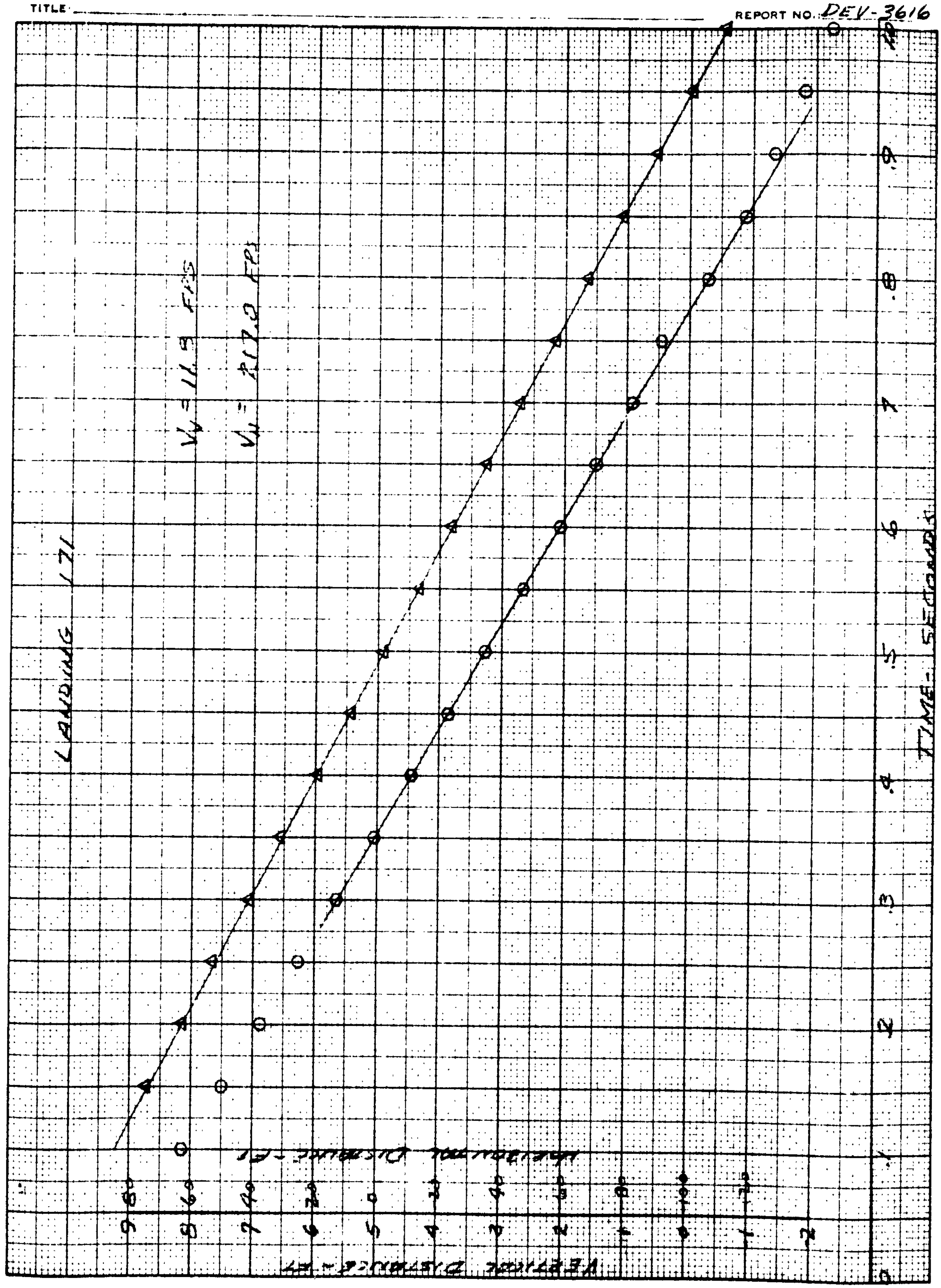
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.8.55

MODEL A4D-2

REPORT NO. DEV-3616



927

FORM 20 B8 (REV. 3-54)

PREPARED BY: Bk

CHECKED BY:

DATE:

TITLE:

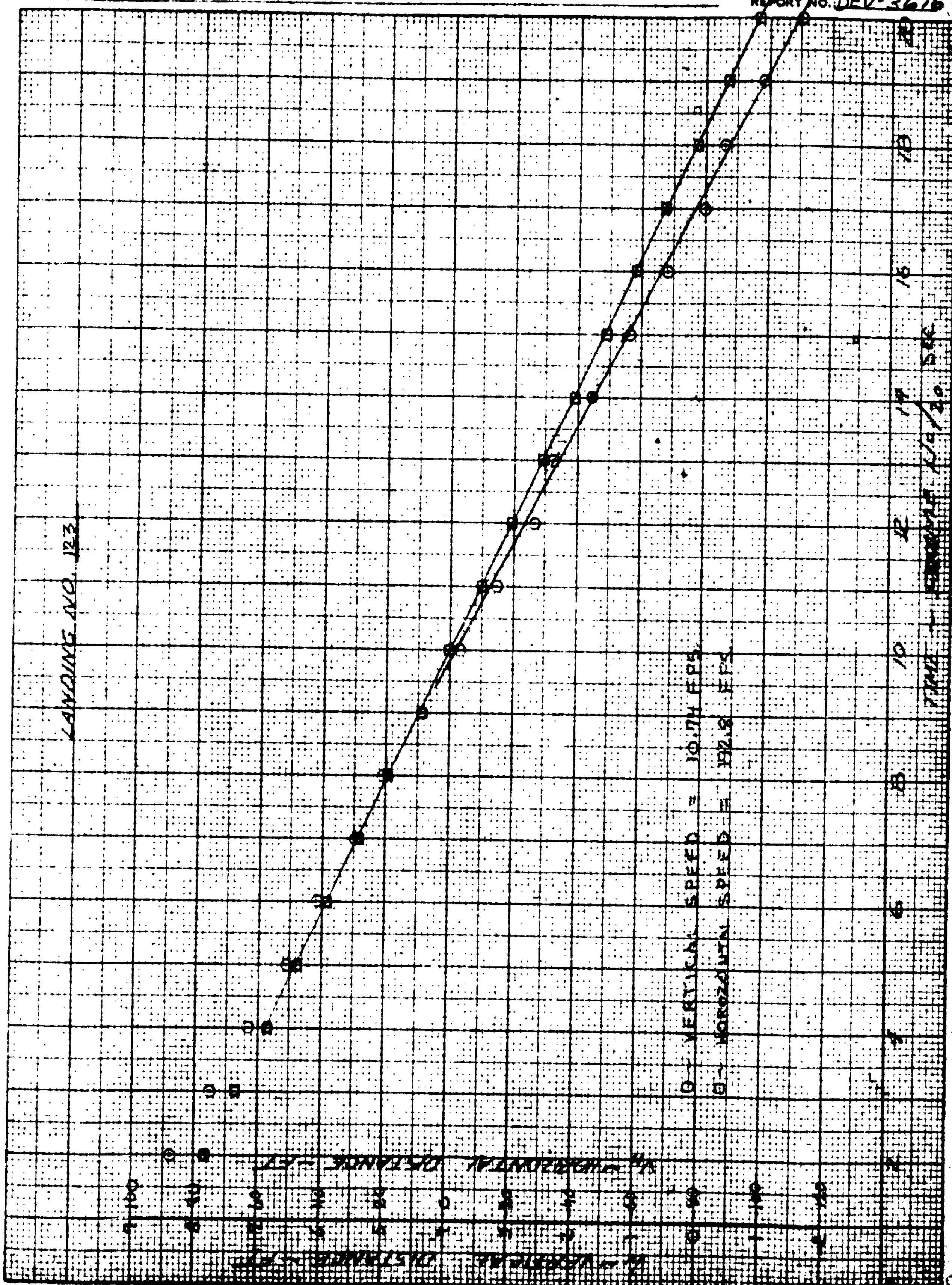
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.9.56

MODEL: A4D-2

REPORT NO. DEV-3616



K+E ALBANENE

207

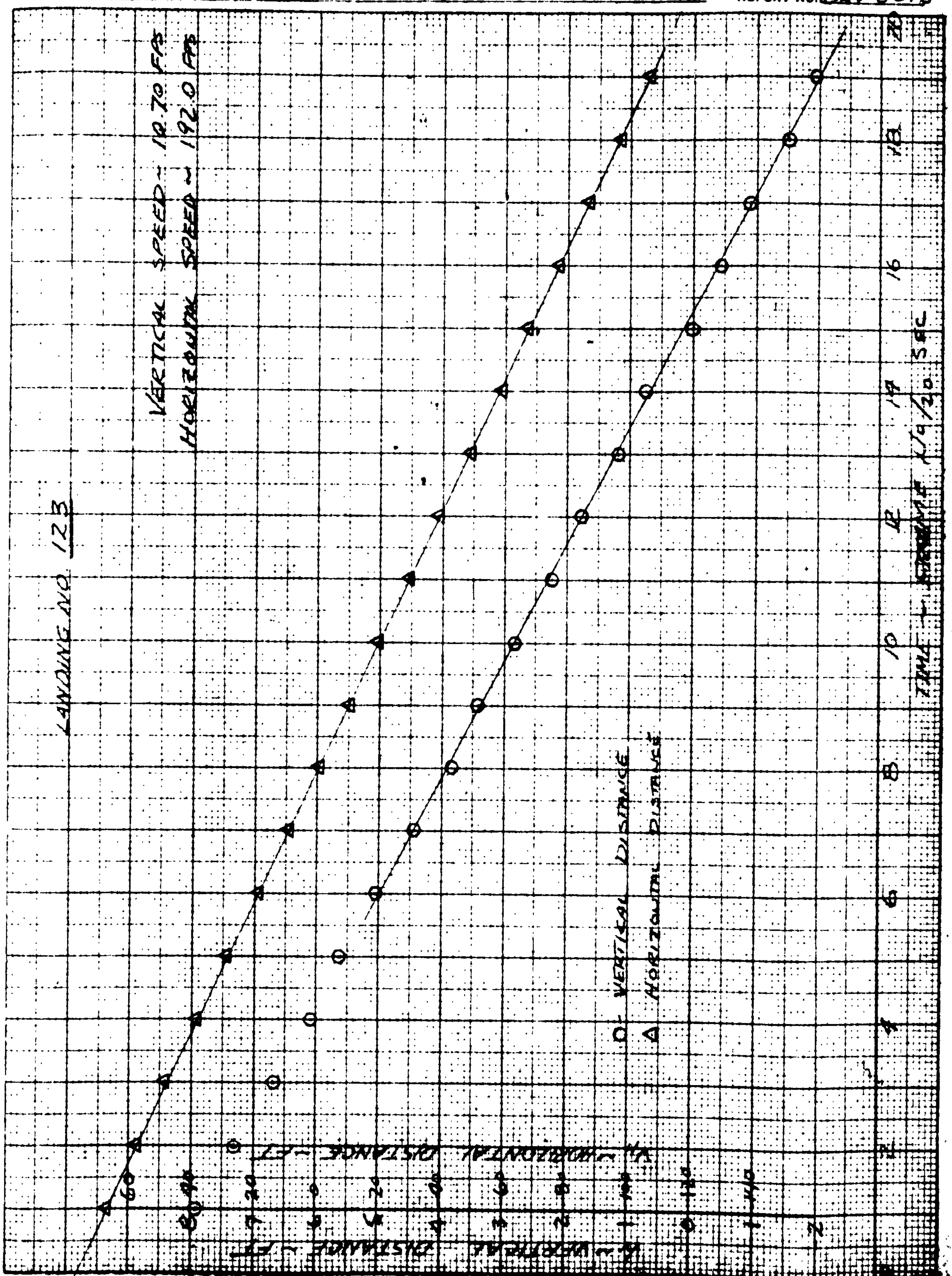
FORM 25 86 (REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.0.57
MODEL: A4D-2
REPORT NO. DEV-3616



K+E ALBANENE 1061

208

FORM 20 58 (REV. 8-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

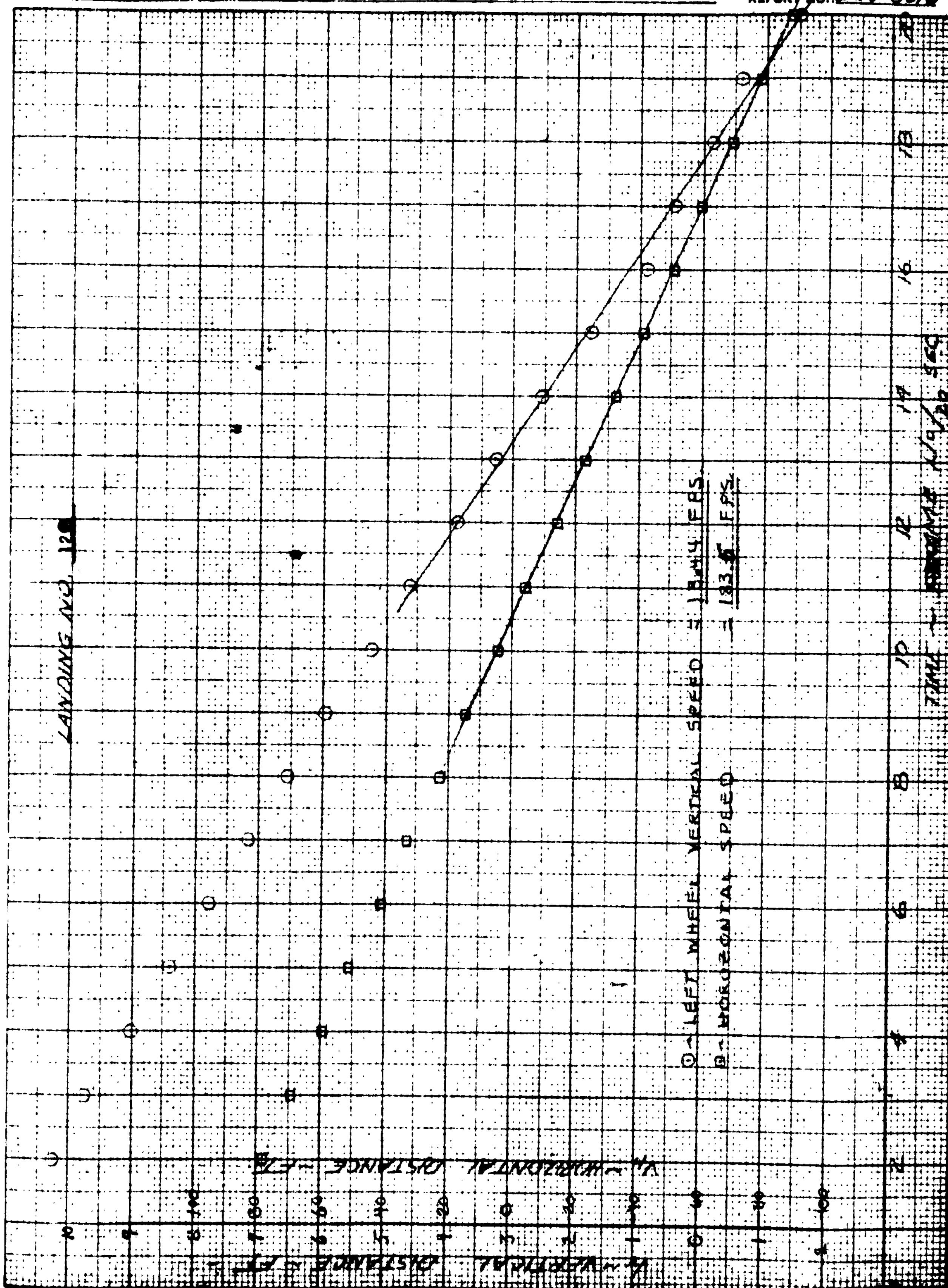
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.8.58

MODEL: A4D-2

REPORT NO. DEV-3616



FORM 20 60 (REV. 3-54)

PREPARED BY:

CHECKED BY:

DATE:

TITLE:

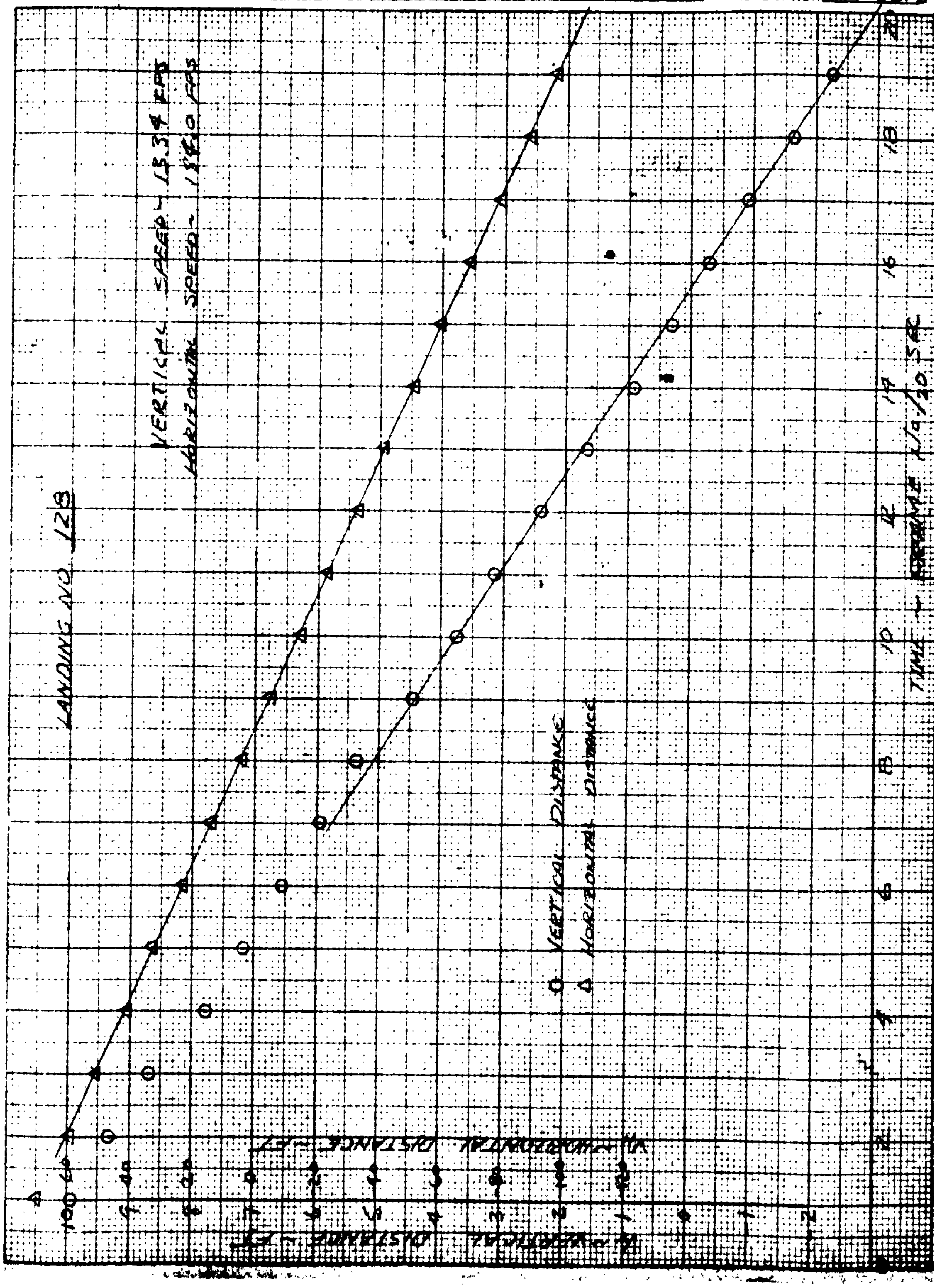
DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.B.59

MODEL: A4D-2

REPORT NO.: DEV-3616



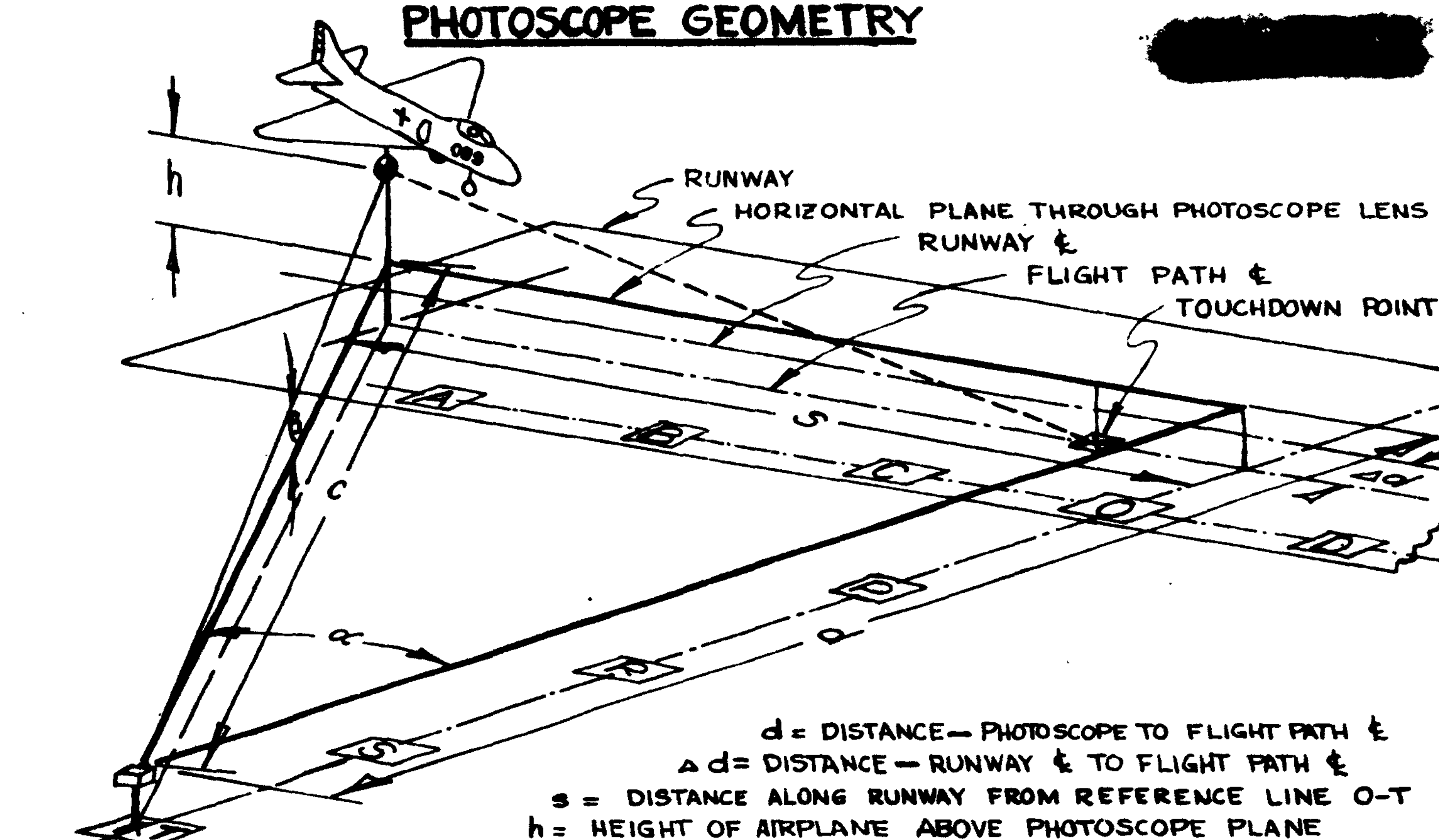
K-E ALBANENE TOOL® TRACING PAPER

210

211

PHOTOSCOPE GEOMETRY

[redacted]



d = DISTANCE — PHOTOSCOPE TO FLIGHT PATH ℄

Δd = DISTANCE — RUNWAY ℄ TO FLIGHT PATH ℄

s = DISTANCE ALONG RUNWAY FROM REFERENCE LINE O-T

h = HEIGHT OF AIRPLANE ABOVE PHOTOSCOPE PLANE

c = HORIZONTAL COMPONENT OF LINE-OF-SIGHT DISTANCE FROM PHOTOSCOPE TO AIRPLANE

α = AZIMUTH ANGLE } FROM PHOTOSCOPE
β = ELEVATION ANGLE } REFERENCE PLANES

[redacted]

$\tan\alpha = s/d$ $\qquad \cos\alpha = d/c$ $\qquad \tan\beta = h/c$

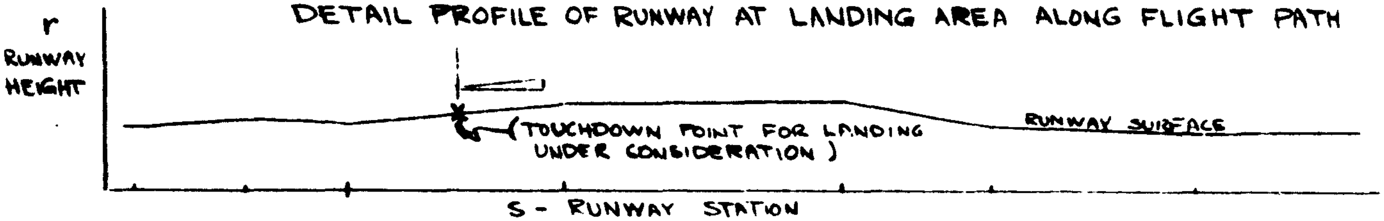
$s = d\tan\alpha$ $\qquad c = d/\cos\alpha$ $\qquad h = c\tan\beta = \dfrac{d\tan\beta}{\cos\alpha}$

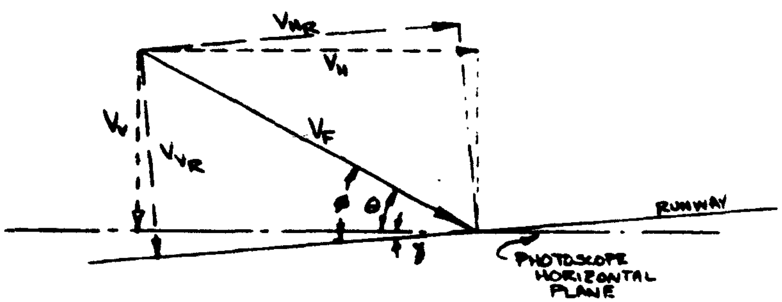
212

[redacted]

CORRECTION FOR RUNWAY SLOPE

DETAIL PROFILE OF RUNWAY AT LANDING AREA ALONG FLIGHT PATH





V_F = VELOCITY ALONG FLIGHT PATH
V_V = VERTICAL VELOCITY COMPONENT WITH RESPECT TO HORIZONTAL PLANE
V_H = HORIZONTAL VELOCITY COMPONENT WITH RESPECT TO HORIZONTAL PLANE
V_{VR} = VELOCITY COMPONENT PERPENDICULAR TO RUNWAY
V_{HR} = VELOCITY COMPONENT PARALLEL TO RUNWAY
θ = FLIGHT PATH ANGLE TO HORIZONTAL
γ = RUNWAY SLOPE ANGLE
ϕ = FLIGHT PATH ANGLE TO RUNWAY = $\theta + \gamma$

DETERMINE γ WITH RUNWAY DATA AT TOUCHDOWN POINT

$$\theta \ \tan^{-1} \frac{V_V}{V_H}$$

$$V_F = \frac{V_V}{\sin\theta} = \frac{V_H}{\cos\theta}$$

$$V_{VR} = V_F \sin\phi = V_F \sin(\theta+\gamma) = V_V \frac{\sin(\theta+\gamma)}{\sin\theta}$$

AND:

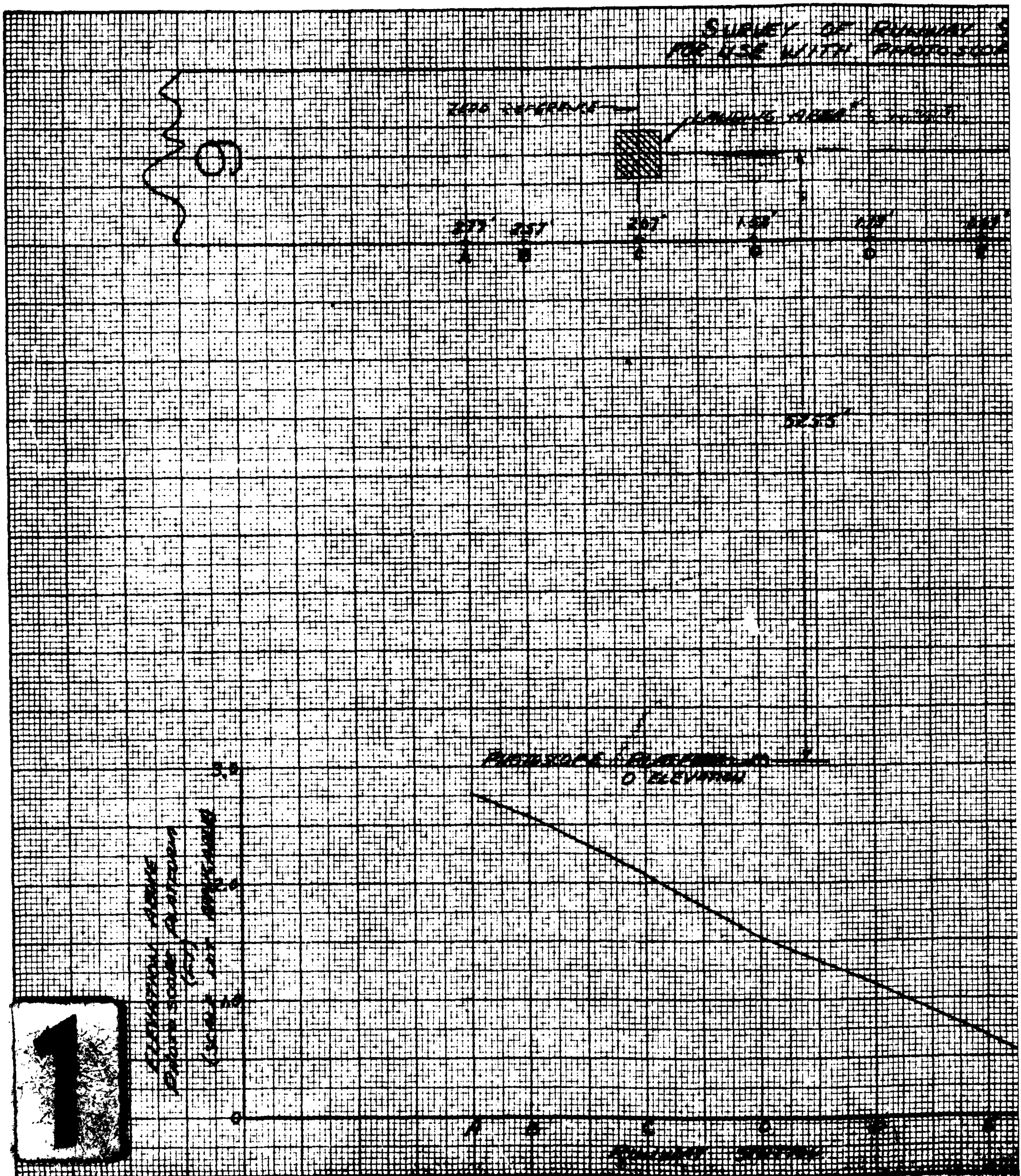
$$V_{HR} = V_F \cos\phi = V_F \cos(\theta+\gamma) = V_H \frac{\cos(\theta+\gamma)}{\cos\theta}$$

1. OBTAIN V_V AND V_H FROM PLOTTED DATA FOR LANDING
2. CALCULATE TAN θ AND DETERMINE θ
3. CALCULATE TAN γ FROM RUNWAY SLOPE DATA AND DETERMINE γ
4. DETERMINE V_{VR} AND V_{HR}

[redacted]

FORM 25 BS-1
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:



K+E ALBANENE 196L

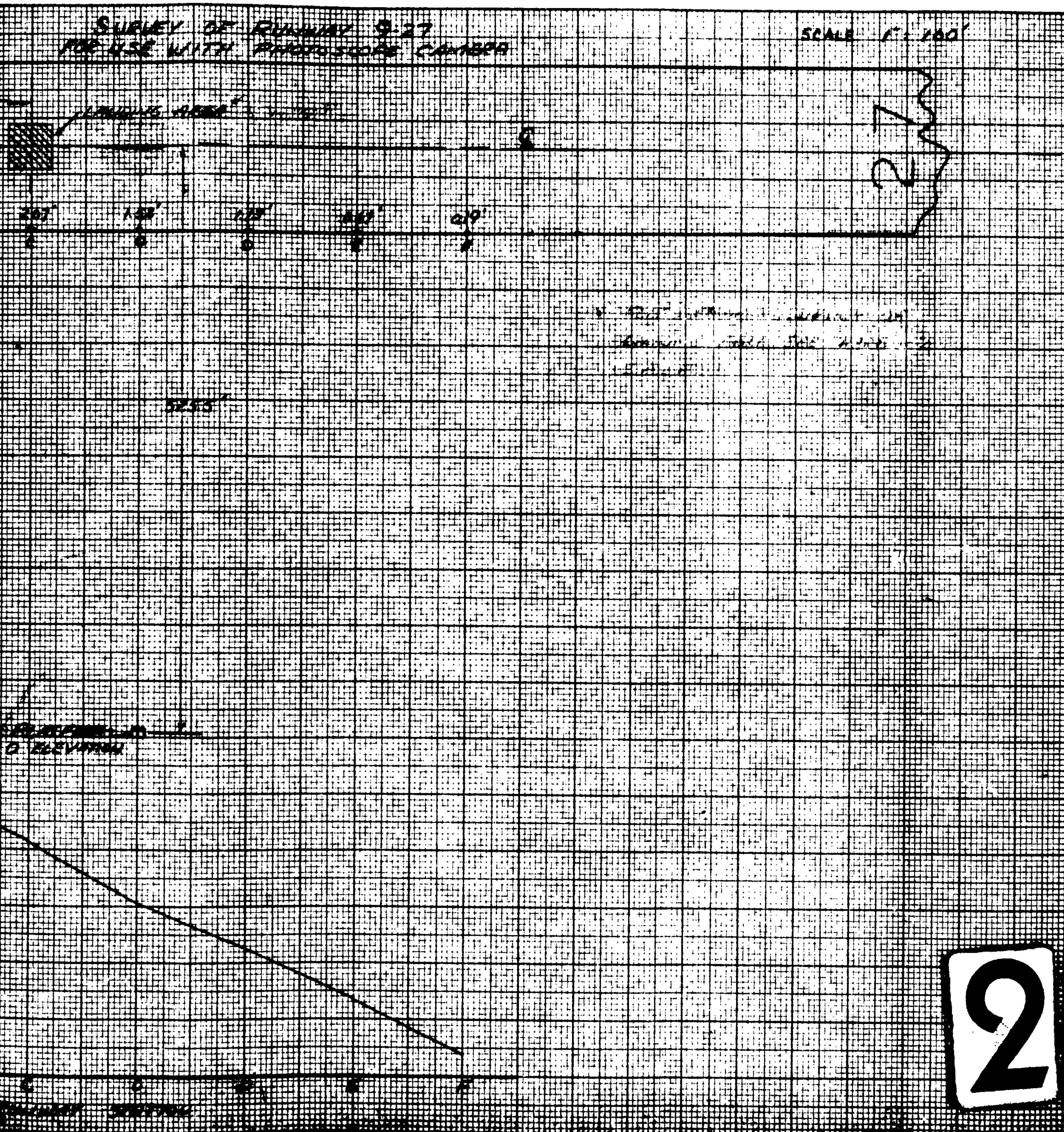
213

PREPARED BY: IEH
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.9.1
MODEL: A4D-2
REPORT NO.: DEV-3616

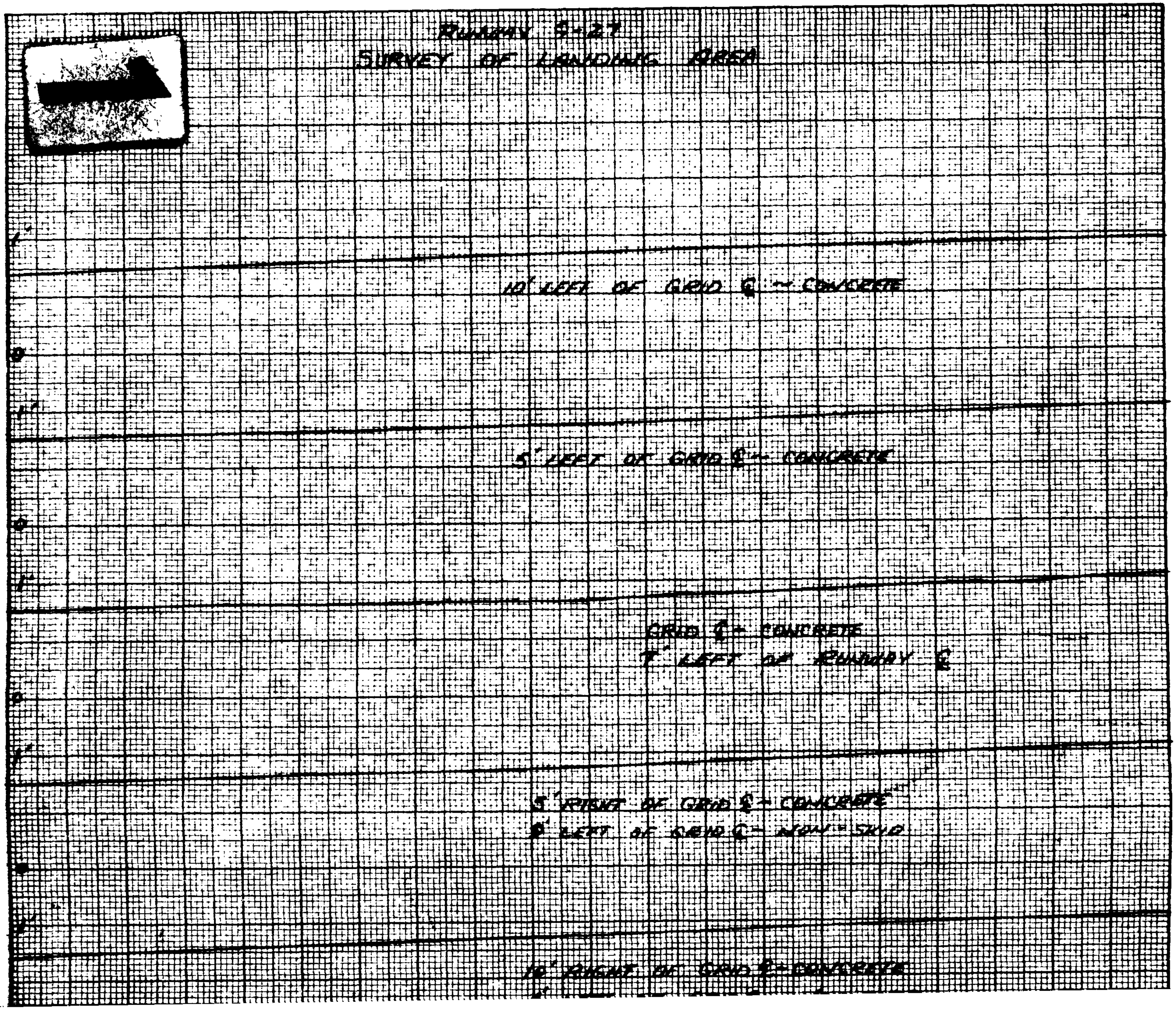


214

K+E ALBANENE 106L ® TRACING PAPER

FORM 85 08-1
(REV. 3-54)

PREPARED BY:
CHECKED BY:
DATE:
TITLE:

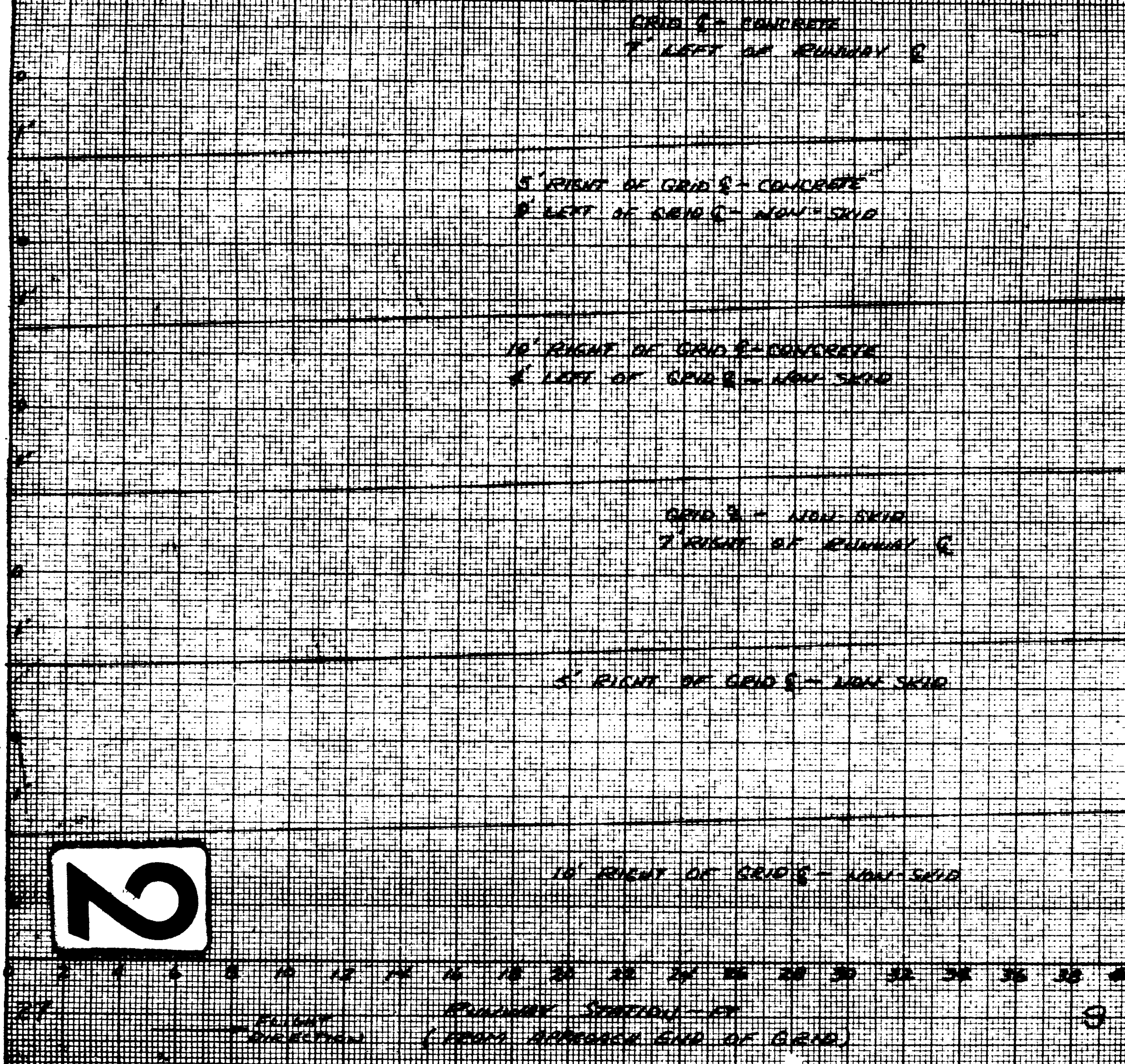


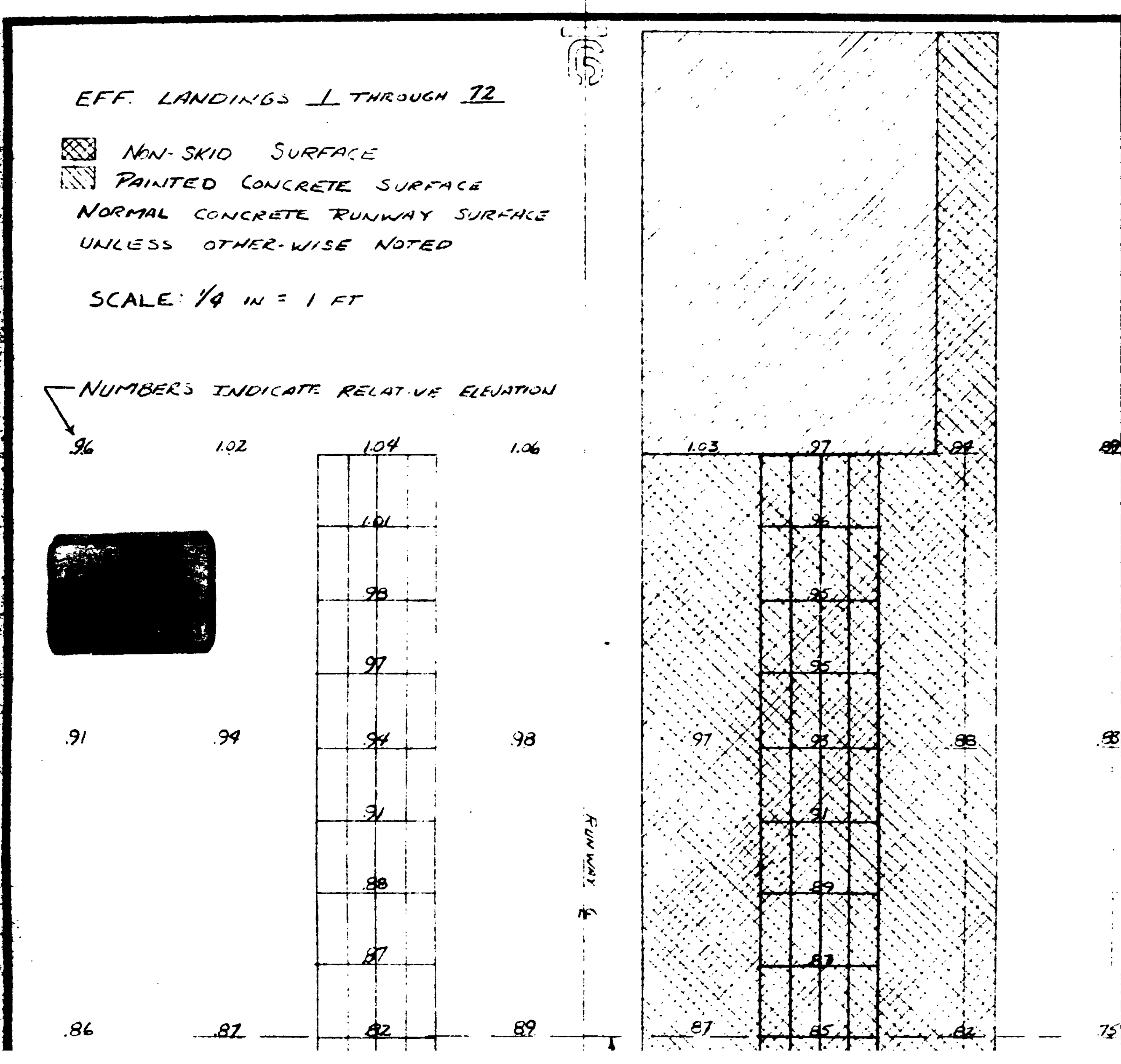
PREPARED BY:
CHECKED BY:
DATE:
TITLE:

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE: 8.9.2
MODEL: A4D-2
REPORT NO.: DEV-3616





PREPARED BY
CHECKED BY
DATE
TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY IEH

CHECKED BY

DATE

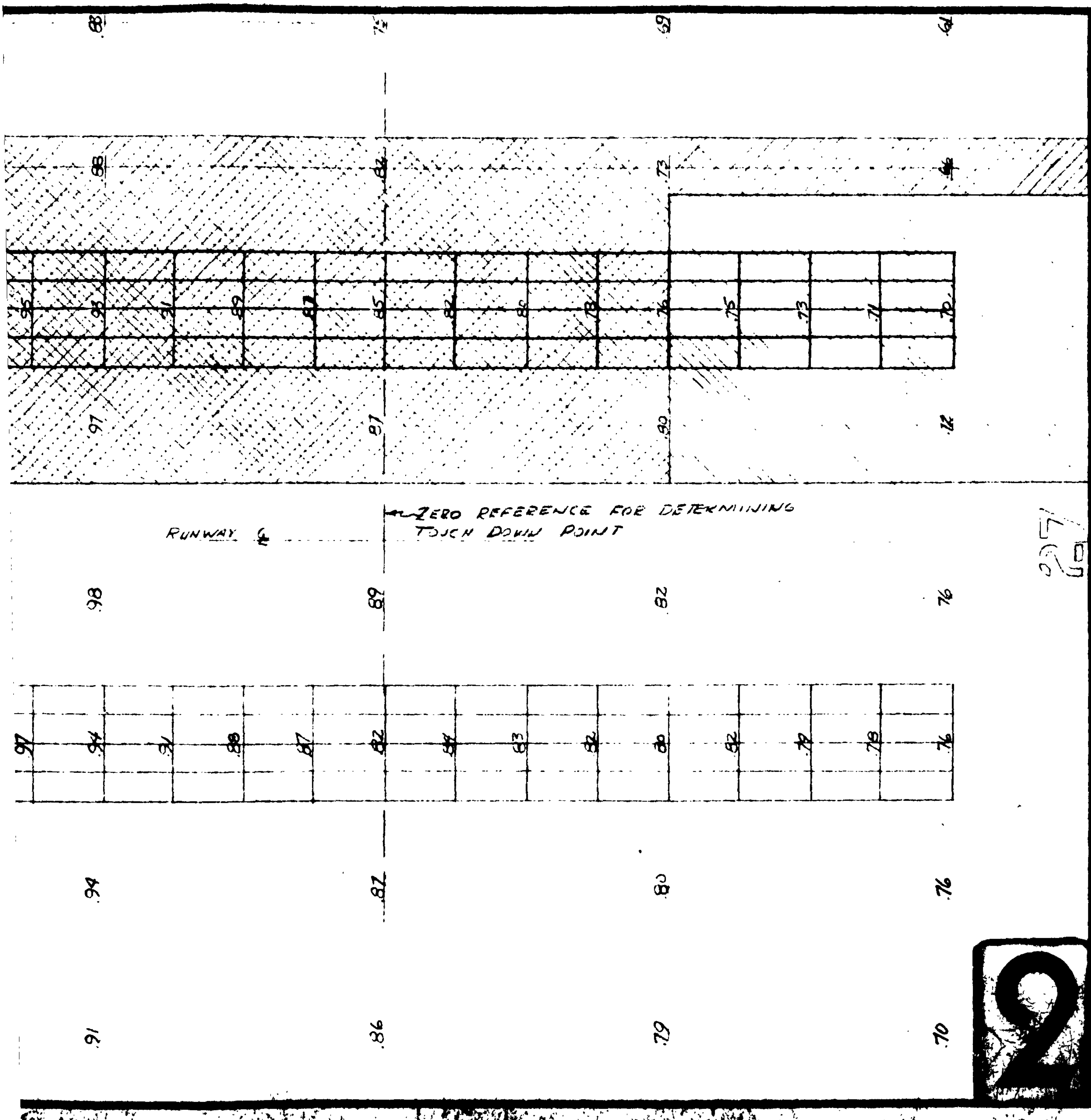
TITLE

DIVISION

PAGE 8.9.3

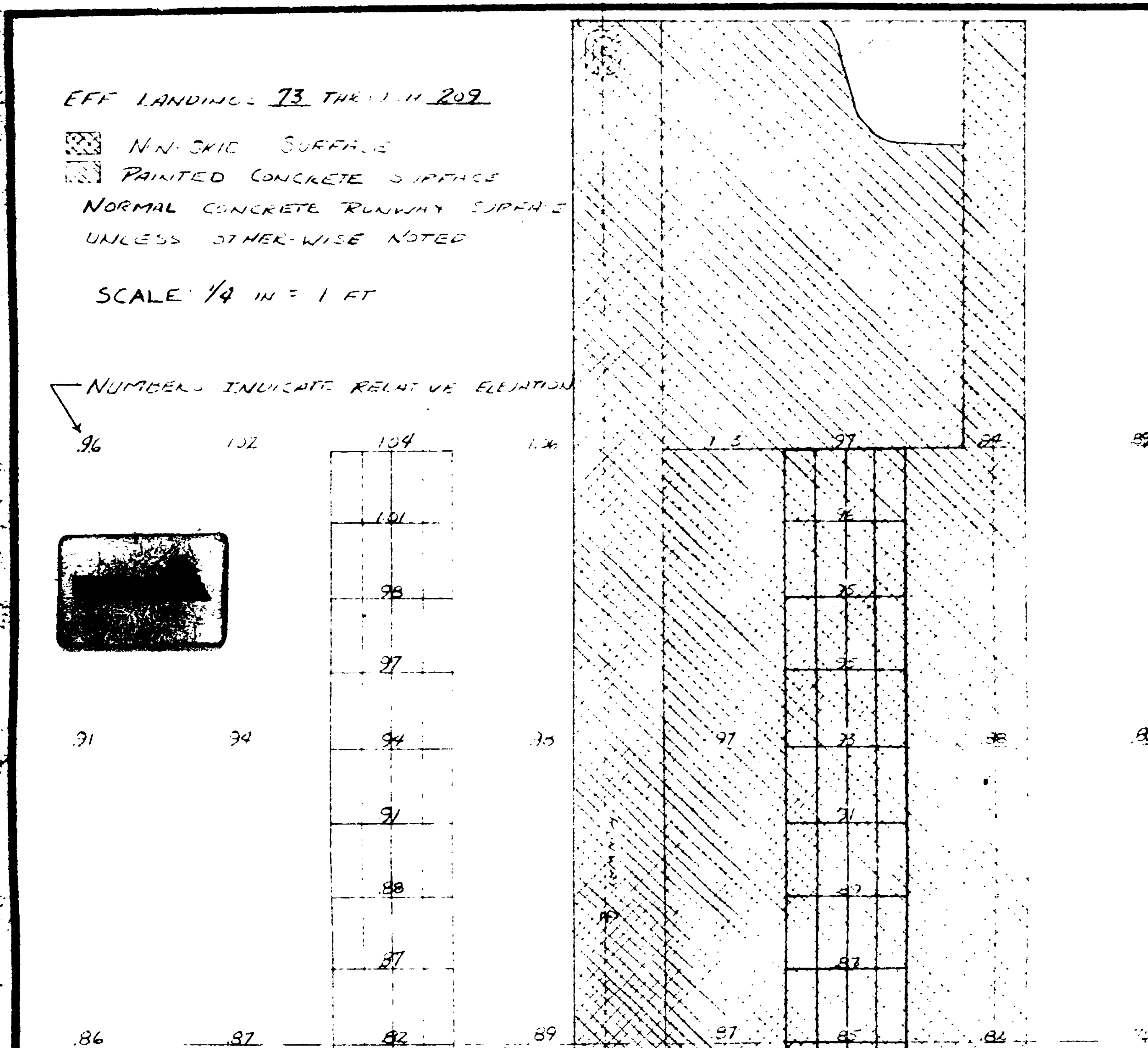
MODEL A4D-2

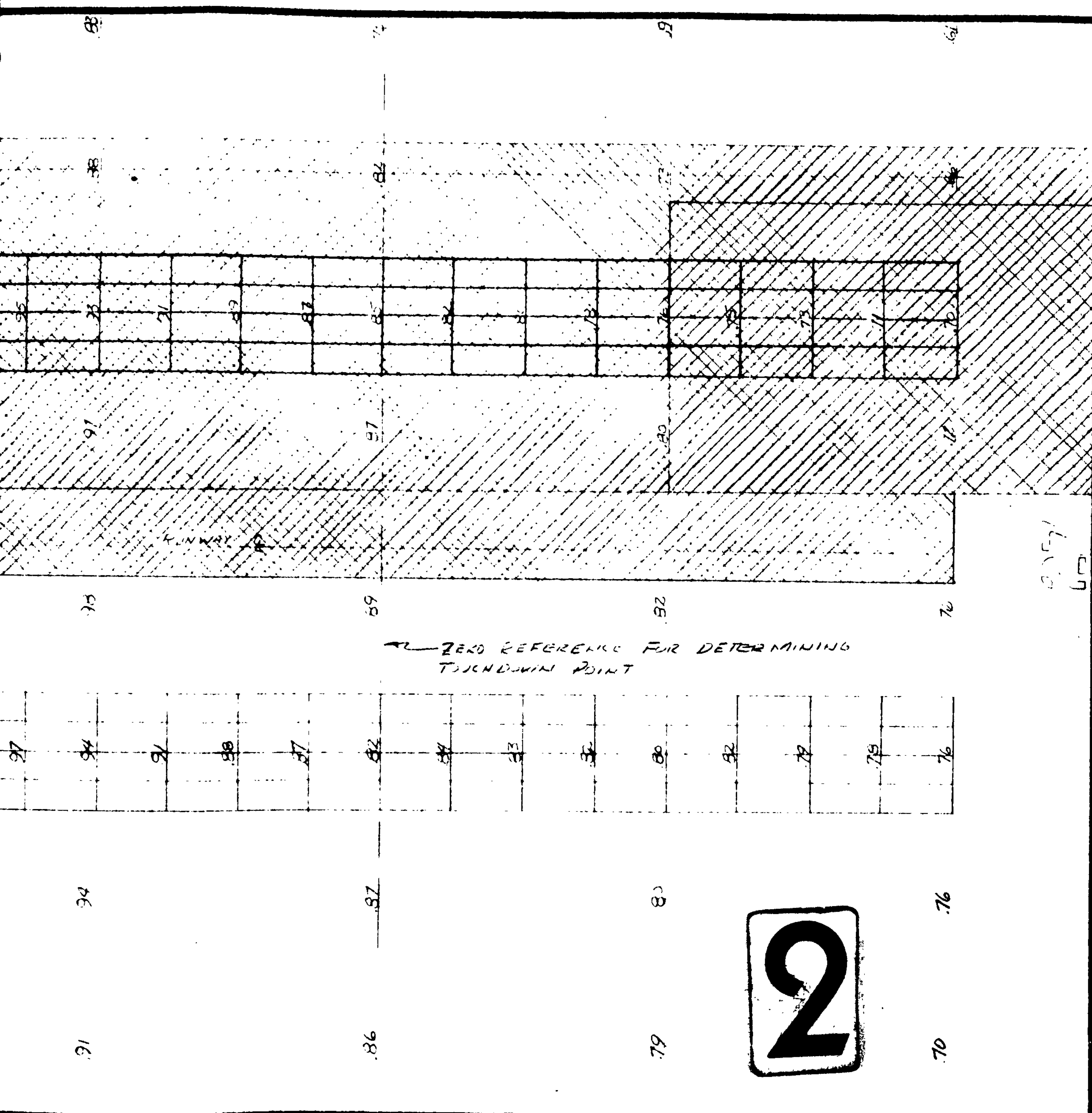
REPORT NO DEV-3616



216

PREPARED BY
CHECKED BY
DATE
TITLE





RUNWAY
ZERO REFERENCE FOR DETERMINING TOUCHDOWN POINT
2

AN-9249-A

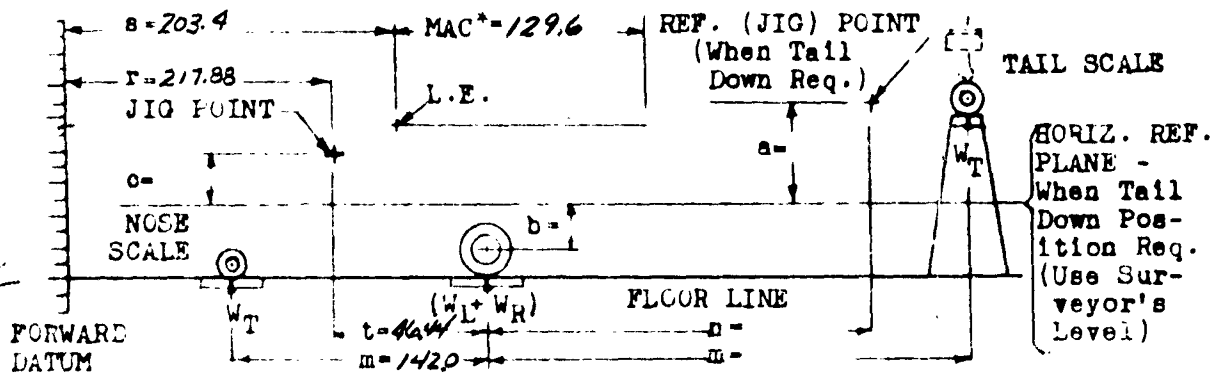
Load Condition EMPTY
Prepared by IEH
Date 8-27-60

Page 8.10.1
Model A4D-2
Report No. DEV-3616

AIRCRAFT ACTUAL WEIGHT AND HORIZONTAL BALANCE

Contract No. ________, Gov't. No. ________, Fact. No. ________, Art. No. ___

SCALE POSITION	SCALE NO.	SCALE READING (Lbs.)	TARE	SCALE ERROR	SYMBOL	NET WEIGHT
Both ~~Left~~ Main Wheels		9041	1	0	W_{L+R}	9040
~~Right Main Wheel~~					~~W_R~~	
Nose ~~Tail~~ Wheel		1442	1	0	W_T	1441
TOTAL WEIGHT		10483	2		W	10481



CENTER OF GRAVITY TO FORWARD DATUM (HORIZ. DIST. - AS WEIGHED)

Tail Wheel Type: $r + t + \frac{W_T \times m}{W}$ = ________ = In.

Nose Wheel Type: $r + t - \frac{W_T \times m}{W}$ = $264.32 - \frac{1441(142.00)}{10481} = 244.80$ In.

CORRECTED WEIGHT & HORIZONTAL BALANCE

ITEMS ADDED & SUBTRACTED	WEIGHT (Lbs.)	H-DIST (In.) C.G. TO FWD. DATUM	MOMENT (In.-Lbs.)	GUARANTEED
Aircraft as Weighed	10,481	244.80	2565749	
Plus - See Pages	—			
Minus - See Pages	—			
	10,481	244.80	2565749	
LI2 TOTAL ~~EMPTY~~ GROSS WEIGHT				
BALANCE (Corrected) = $\frac{(\text{H-Dist.}) - s}{\text{M.A.C.}}$ = $\frac{244.80 - 203.4}{129.6}$ = 31.9% M.A.C.				to % M.A.C. % M.A.C.

*M.A.C. calc. in accord. with Handb'k. Sec. II, Part II, (Army) or SR-7 (Navy)

Witnessed by________

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE
TITLE AIRPLANE LOADING BuNo. 142089

DIVISION
PAGE 8.10.2
MODEL A4D-2
~~REPORT~~ NO. DEV-3616

DESCRIPTION WEIGHT EMPTY - NO FUEL	WEIGHT	H-Sta	H-MOM/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incls Flt Gear)	210	109.0	22.9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAST			
LESS COMPASS CONTROL	-9.5	15.0	-0.1
GROSS WEIGHT (No Fuel) 30.0 % MAC GEAR DN	10681	242.3	2588.5
Ldg Gear Mom Change (Dn to Up)			-20.8
GROSS WEIGHT (No Fuel) ______ % MAC GEAR UP			
FUEL ______ lbs./gal			
Fus. Tank ______ gals.			
Wing Tank ______ gals.			
External ______ gals.			
GROSS WEIGHT (ENG. START) ______ % MAC GEAR UP			

LANDINGS: 1 through 23

218

203.4/129.6

PREPARED BY
CHECKED BY
DATE

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8.10.3
MODEL A4D-2
NO DEV-3616

AIRPLANE LOADING BuNo. 142089

DESCRIPTION Weight Empty	WEIGHT	H-Sta	H-MOM/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incls Flt Gear)	210	109.0	22.9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAST			
LESS COMPASS CONTROL	-9.5	15.0	-0.1
LESS POWER SUPPLIES	-23.0	281.5	-6.5
ADD BATTERY PACK	33.25	281.5	9.4
GROSS WEIGHT (No Fuel) 30.1 % MAC GEAR DN	10691	242.4	2591.4
Ldg Gear Mom Change (Dn to Up)			-20.8
GROSS WEIGHT (No Fuel) ____ % MAC GEAR UP			
FUEL ____ lbs./gal			
Fus. Tank ____ gals.			
Wing Tank ____ gals.			
External ____ gals.			
GROSS WEIGHT (ENG. START) ____ % MAC GEAR UP			

LANDINGS: 24 through 137

AIRPLANE LOADING BuNo. 142089 ~~XXXX~~ NO DEV-3616

DESCRIPTION WEIGHT EMPTY	WEIGHT	H-Sta	H-MOM/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incls Flt Gear)	210	109.0	22.9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAST			
LESS POWER SUPPLIES	-23.0	281.5	-6.5
ADD BATTERY PACK	33.25	281.5	9.4
ADD EMPTY 150 GAL. TANKS AND ACCEL.	280.0	246.7	69.1
ADD 300 GAL. JP-5 at 6.7 #/gal	2010.0	236.7	475.8
GROSS WEIGHT (No Fuel) 29.3 % MAC GEAR DN	12991	241.4	3136.4
Ldg Gear Mom Change (Dn to Up)			-20.8
GROSS WEIGHT (No Fuel) ____ % MAC GEAR UP			
FUEL ____ lbs./gal			
Fus. Tank ____ gals.			
Wing Tank ____ gals.			
External ____ gals.			
GROSS WEIGHT (ENG. START) ____ % MAC GEAR UP			

LANDINGS: 138 through 156

220

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE
TITLE AIRPLANE LOADING BuNo. 142089

DIVISION

PAGE 8.10.5
MODEL AD 2
NO. DEV-3616

DESCRIPTION WEIGHT EMPTY	WEIGHT	H-Sta	H-MOM/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incls Flt Gear)	210	109.0	22.9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAST			
LESS POWER SUPPLIES	-23.0	281.5	-6.5
ADD BATTERY PACK	33.25	281.5	8.4
ADD EMPTY 300 GAL TANKS AND ACCEL.	280.0	246.7	69.1
GROSS WEIGHT (No Fuel) 28.3 % MAC GEAR DN	10981	240.1	2636.7
Ldg Gear Mom Change (Dn to Up)			-20.8
GROSS WEIGHT (No Fuel) ______ % MAC GEAR UP			
FUEL ______ lbs./gal			
Fus. Tank ______ gals.			
Wing Tank ______ gals.			
External ______ gals.			
GROSS WEIGHT (ENG. START) ______ % MAC GEAR UP			

LANDINGS: 157 through 160

132

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE

PAGE 8.10.6

DIVISION

MODEL A4D-2

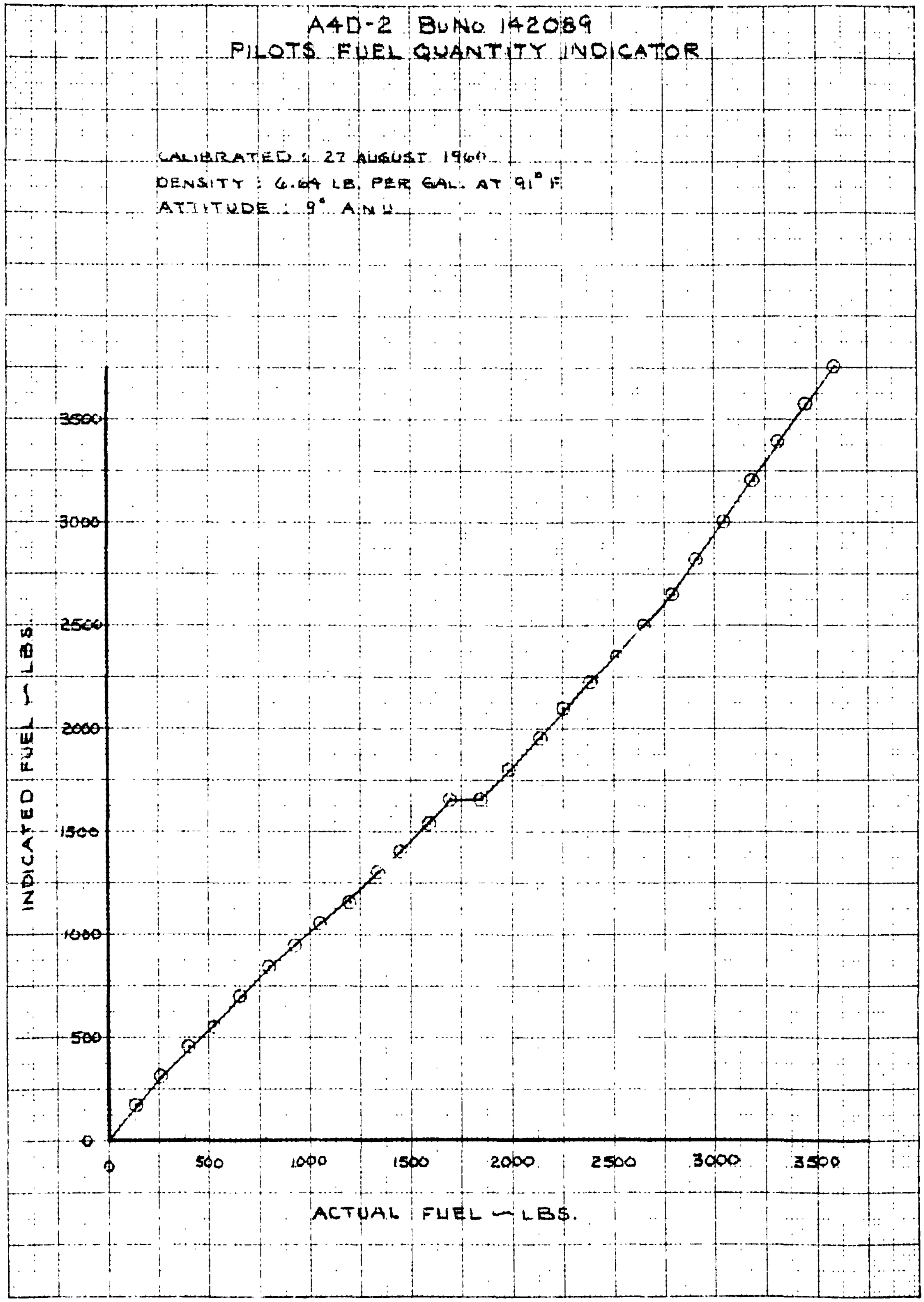
NO. DEV-3616

AIRPLANE LOADING   BuNo. 142089

DESCRIPTION WEIGHT EMPTY	WEIGHT	H-Sta	H-MOM/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incls Flt Gear)	210	109.0	22.9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAST			
LESS POWER SUPPLIES	-23.0	281.5	-6.5
ADD BATTERY PACK	33.25	281.5	8.4
GROSS WEIGHT (No Fuel) 29.9 % MAC GEAR DN	10701	242.1	2590.5
Ldg Gear Mom Change (Dn to Up)			-20.8
GROSS WEIGHT (No Fuel) ____ % MAC GEAR UP			
FUEL ____ lbs./gal			
Fus. Tank ____ gals.			
Wing Tank ____ gals.			
External ____ gals.			
GROSS WEIGHT (ENG. START) ____ % MAC GEAR UP			

LANDINGS: 161 through 209

222


A4D-2 BuNo 142089
PILOTS FUEL QUANTITY INDICATOR
CALIBRATED : 27 AUGUST 1960
DENSITY : 6.64 LB. PER GAL. AT 91° F
ATTITUDE : 9° A.N.U.
INDICATED FUEL ~ LBS.
3500
3000
2500
2000
1500
1000
500
0
500
1000
1500
2000
2500
3000
3500
ACTUAL FUEL ~ LBS.

FORM 20-8-1 (REV 8-53)

PREPARED BY

CHECKED BY

DATE 12-6-60

TITLE

DOUGLAS AIRCRAFT COMPANY, INC.

TESTING DIVISION

PAGE: 8.11.1

MODEL: A4D-2

REPORT NO DEV-3616

224

A4D-2 BuNo 142089 Strut and Tire Pressure History

DATE	NOSE GEAR			R.H. MAIN GEAR			L.H. MAIN GEAR		
	DECK PRESSURE AT EXTENSION	AIR PRESSURE	TIRE PRESSURE	DECK PRESSURE AT EXTENSION	AIR PRESSURE	TIRE PRESSURE	DECK PRESSURE AT EXTENSION	AIR PRESSURE	TIRE PRESSURE
29 AUG '60					10	225 x		15	250 x
30 AUG '60					23.5			22.5	
2 SEPT '60		170			30	255 x		25.5	265 x
6 SEPT '60	215 @ 18"	215			25.5	270°		25.5	280°
7 SEPT '60	STANDARD GAGES	200°	165°	@ 1.15	21°	300°	@ 1.16	20.5°	300°
8 SEPT '60		210	239		23°	310		25	305
9 SEPT '60		210	250		25	313		25	317
13 SEPT '60		204°	240°		26.5	306°		25	300°
14 SEPT '60		210	245		21.5	310		25	312
15 SEPT '60		205	250		22.5	250		25	295
			284		25	304		21.5	315
20 SEPT '60		200°	246°	328 @ 1.9	25 x	315°		24°	315°
26 SEPT '60									
27 SEPT '60		200°	235°		23°	305 x		23 x	300 x
29 SEPT '60		205°	245°		26	310°		24°	300°
30 SEPT '60		210 x	250 x		24°	310°		23°	315°
3 OCT. '60		206°	247°	450 @ 1.5"	SET TO 25	305°	450 @ 1.5	12°	307°
4 OCT '60		210 x	250 x		SET TO 25	315°		24°	312°
5 OCT '60		210 x	280 x		25 x	320 x		24°	210°
6 OCT '60		208°	250 x		25 x	310°		25 x	310

x ~ NOT BROUGHT UP TO PRESSURE   ° ~ BROUGHT UP TO PRESSURE

K+E ALBANENE 196L TRACING PAPER

FORM 20-8-1 (REV 8-53)

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY
CHECKED BY
DATE 12-6-60
TITLE

TESTING DIVISION

PAGE: B.11.2
MODEL A4D-2
REPORT NO DEV-3616

225

A4D-2 BuNo 142089 Strut and Tire Pressure History

DATE	NOSE GEAR			R.H. MAIN GEAR			L.H. MAIN GEAR		
	DECK PRESSURE AT EXTENSION	AIR PRESSURE	TIRE PRESSURE	DECK PRESSURE AT EXTENSION	AIR PRESSURE	TIRE PRESSURE	DECK PRESSURE AT EXTENSION	AIR PRESSURE	TIRE PRESSURE
11 OCT '60		185°	232°		24°	320°		25x	292°
12 OCT '60		220°	260°		20°	290°		22°	320x
19 OCT '60		210°	220°		25x	270°		20°	270°
20 OCT '60		200°	240°		24°	310°		25x	305°
21 OCT '60		210x	200°		24°	310°		24°	310°
22 OCT '60		210x	200°		25x	320x		25x	320x
25 OCT '60		209°	200°		23°	260°		25x	290°
26 OCT '60		210x	235°		22°	315°		24°	320x
27 OCT '60		205°	245°		25°	320°		25°	320°
28 OCT '60		200°	245°		24.5°	320x		24.5°	320x
29 OCT '60		205°	225°		25x	310°		25x	295°
31 OCT '60		200°	250x		24.5°	320x		25x	320x
1 NOV '60		210x	210x		24.5°	320x		25x	310°

x ~ NOT BROUGHT UP TO PRESSURE

o ~ BROUGHT UP TO PRESSURE

K+E ALBANENE 106L TRACING PAPER 64007

Douglas Aircraft Co. Inc., Aircraft Division, Long Beach, Calif.
Rpt No. DEV-3616, FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE, 7 December 62. 221 p. includes time history plots.

Unclassified Report

This report contains information accumulated during a flight test program to obtain airplane landing gear loads and airplane and store accelerations during landings under various conditions. Landings were made at the following conditions:

1. Symmetrical landings on a dry concrete surface and a non-skid surface at different conditions of vertical and horizontal speeds.
2. Symmetrical landings with external stores.
3. Landings in a rolled attitude.
4. Cable impact landings.

This flight test program was performed for the Bureau of Naval Weapons as a part of Contract NOa(s) 59-6226c which covered Flight Test, Laboratory Drop Test, and Analysis.

UNCLASSIFIED

1. Landing Loads
2. Loads, Aircraft
3. Cable Impact
4. External Stores
5. Flight Testing

I. Contract NOa(s) 59-6226c
II. Douglas Aircraft Co., Inc. Aircraft Division Long Beach, Calif.
III. I. E. Harris
IV. S. F. Tydeman
V. Aval Fr Naval BuWeps

UNCLASSIFIED

Douglas Aircraft Co. Inc., Aircraft Division, Long Beach, Calif.
Rpt No. DEV-3616, FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE, 7 December 62. 221 p. includes time history plots.

Unclassified Report

This report contains information accumulated during a flight test program to obtain airplane landing gear loads and airplane and store accelerations during landings under various conditions. Landings were made at the following conditions:

1. Symmetrical landings on a dry concrete surface and a non-skid surface at different conditions of vertical and horizontal speeds.
2. Symmetrical landings with external stores.
3. Landings in a rolled attitude.
4. Cable impact landings.

This flight test program was performed for the Bureau of Naval Weapons as a part of Contract NOa(s) 59-6226c which covered Flight Test, Laboratory Drop Test, and Analysis.

UNCLASSIFIED

1. Landing Loads
2. Loads, Aircraft
3. Cable Impact
4. External Stores
5. Flight Testing

I. Contract NOa(s) 59-6226c
II. Douglas Aircraft Co., Inc. Aircraft Division Long Beach, Calif.
III. I. E. Harris
IV. S. F. Tydeman
V. Aval Fr Naval BuWeps

UNCLASSIFIED

Douglas Aircraft Co. Inc., Aircraft Division, Long Beach, Calif.
Rpt No. DEV-3616, FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE, 7 December 62. 221 p. includes time history plots.

Unclassified Report

This report contains information accumulated during a flight test program to obtain airplane landing gear loads and airplane and store accelerations during landings under various conditions. Landings were made at the following conditions:

1. Symmetrical landings on a dry concrete surface and a non-skid surface at different conditions of vertical and horizontal speeds.
2. Symmetrical landings with external stores.
3. Landings in a rolled attitude.
4. Cable impact landings.

This flight test program was performed for the Bureau of Naval Weapons as a part of Contract NOa(s) 59-6226c which covered Flight Test, Laboratory Drop Test, and Analysis.

UNCLASSIFIED

1. Landing Loads
2. Loads, Aircraft
3. Cable Impact
4. External Stores
5. Flight Testing

I. Contract NOa(s) 59-6226c
II. Douglas Aircraft Co., Inc. Aircraft Division Long Beach, Calif.
III. I. E. Harris
IV. S. F. Tydeman
V. Aval Fr Naval BuWeps

UNCLASSIFIED

Douglas Aircraft Co. Inc., Aircraft Division, Long Beach, Calif.
Rpt No. DEV-3616, FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE, 7 December 62. 221 p. includes time history plots.

Unclassified Report

This report contains information accumulated during a flight test program to obtain airplane landing gear loads and airplane and store accelerations during landings under various conditions. Landings were made at the following conditions:

1. Symmetrical landings on a dry concrete surface and a non-skid surface at different conditions of vertical and horizontal speeds.
2. Symmetrical landings with external stores.
3. Landings in a rolled attitude.
4. Cable impact landings.

This flight test program was performed for the Bureau of Naval Weapons as a part of Contract NOa(s) 59-6226c which covered Flight Test, Laboratory Drop Test, and Analysis.

UNCLASSIFIED

1. Landing Loads
2. Loads, Aircraft
3. Cable Impact
4. External Stores
5. Flight Testing

I. Contract NOa(s) 59-6226c
II. Douglas Aircraft Co., Inc. Aircraft Division Long Beach, Calif.
III. I. E. Harris
IV. S. F. Tydeman
V. Aval Fr Naval BuWeps

UNCLASSIFIED